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PRACTICAL JOB EVALUATION

PRACTICAL JOB EVALUATION

the applications of wage determination to wage structures

PHILIP W. JONES

Director of Industrial Relations
Hilton Hotels Corporation

1948

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Dedicated to

A. D. J.

FOREWORD

The publication of *Practical Job Evaluation* comes at a time of vigorous, militant, and worldwide political, economic, and social changes. Human reactions follow the patterns of these changes so rapidly that we are usually unaware of them until it is almost too late so that "crash programs" become necessary to keep abreast of the movements of the time. Industry, in general, finds itself in that position today.

The urgency of wars, as we all know, has driven industry into accepted shortening processes, upsetting the well-established order of things. Technological changes, improved procedures, and job dilution are carried out with reduced resistance on the part of the people most affected—the men and women of the rank and file. Such processes do, however, generally upset the relative earnings of the people from the bottom to the top of any organization. Upsetting relative earnings leads to a general upsetting. In such an era these earning inequities become more pronounced, calling for an experienced, intelligent, and practical approach and the maximum participation of all concerned, in other words, for the highest form of integration.

For twenty-five years, to my knowledge, we have been "kicking around" the methods of determining equitable earnings of employees by means of job evaluation. Kicking it around in the sense that many people thought that their method, or some mystical formula possessed by them, was the only approach. Philip Jones has not made such an approach in his treatment of this vital problem.

Job evaluation can not stand alone. It brings into focus other problems which may overshadow and influence its end

results. All these problems must be taken into consideration before, at the time, and after job evaluation takes place.

Philip W. Jones through years of experience in applying job evaluation and salary determination and in dealing with their attendant by-products has made in this book an understandable approach to the whole problem of industrial relations. He has pointed out, step by step, the things that are to be done as well as the things not to be done.

Intensive job evaluation is with us in some form—Philip Jones sounds the keynote of the simple way that it can be accomplished.

Andrew J. Percival

Director of Industrial Relations
American Home Products Company
Milton, Pennsylvania
January 1948

PREFACE

This book is devoted almost entirely to the practical aspects of job evaluation. It is a detailed analysis of the subject by one who has been actively engaged in industrial relations at the working level. The emphasis has been placed on the design, installation, and salesmanship of the procedures required to determine the wages of employees in industrial and business organizations.

Practical Job Evaluation has been written because I feel that much of the material which has been published about this relatively new technique is inadequate. Often plans for complicated programs have been presented with little or no discussion of the methods to be used or of the philosophy or the psychology necessary effectively to install them. The executive faced with the problem of determining proper compensatory wages is sometimes placed in the same position as a technician who is given a blueprint for a complicated mechanism but lacks the parts prints and the instructions necessary to fabricate it.

It is hoped that this book will assist a varied group of readers. For students of wage problems, it is designed to teach an important technique in industrial management and to place this technique in its proper relation to the numerous other techniques in daily use in industry. I feel very definitely that any attempt to isolate job evaluation from the living organism of industry and business must fail since no system of compensation can be designed without due regard to the other organization problems. For a person who is without previous experience in wage compensation, but who is interested in establishing a sound wage structure in his company, the book is designed to guide him and his asso-

ciates in their own operations. It points out the actual problems and pitfalls attending the formulation and installation of a uniform wage program and presents tested means of solving and avoiding them. Finally, for persons experienced in the field of wage administration, it is hoped that this book will stimulate an exchange of experiences and offer some new and usable viewpoints.

Job evaluation is not something new. It is not a magic formula suddenly uncovered which will solve the problems of compensation for all time. Job evaluation is just a new and popular name for a technique that actually, if unconsciously, has been practiced ever since man worked for hire. Both employees and employers have always evaluated jobs in some manner, and modernized evaluation simply represents a formalized approach to a problem handled in the past by rule of thumb.

There are many ways of setting up and administering a job evaluation program. Most of these ways will work if they are based upon fairness and reason. During the years of World War II industry experienced the growth, varying degrees of popularity, and merchandising of several varieties of job evaluation plans. The backers of some of these evaluation plans sometimes implied that theirs was the one and only plan and that all other plans were only artifices. There is no plan that has achieved universal acceptance. All are based on an orderly approach to problems which must always be resolved by considered estimates. The choice of any particular plan rests on its successful use in a particular business, industry, or company and on the special characteristics which may be peculiar to that organization. The plans and techniques discussed in this text have proved successful in the many situations which have arisen in practical applications.

Job evaluation can not be considered separately and apart from the common functions of management, particularly industrial relations, since everything done in creating or changing wage structures affects the lives of people. What

affects people in turn definitely affects the successful operation of the business or industrial enterprise for which they work.

Job evaluation practices will play an important part in the modernization of industrial relations. These changes will undoubtedly evolve as our economy changes, just as our present industrial society is a product of the times and not the determinant of them. It is believed, however, that the principles outlined in this book will endure since sound evaluations are based on objectivity, fairness, considered judgment, and basic facts. These are the elements which make up an industrial democracy.

The author of any book of this nature is always indebted to many friends and associates who have materially assisted in formulating its ideas and methods of presentation. Many other people—business executives, personnel managers, members of labor unions, and representatives of government—have contributed freely of their experiences and philosophies, providing a storeroom of knowledge for the actual writing of the book. Special acknowledgments are due to Mr. A. M. Hammond, who in 1932 first provided actual opportunities in this work; to Mr. A. J. Percival and his associates for their part in the mutual solving of some of these problems in human relationships; and finally to Emma Archer and Marjorie Weggeland for their assistance in the preparation of the manuscript.

Philip W. Jones

New York, N. Y.

January 1948



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1. THE HISTORY AND NATURE OF JOB EVALUATION

Historical Background of Job Evaluation

RESEARCH for references regarding early evaluations shows that during the formative stages of the federal government the problem of setting equitable wages was frequently brought to the attention of the legislators. Even at that early time it was recognized that the basis of setting fair wages was to be determined by the work the federal employee performed. Even then the government agencies constantly struggled to find some procedure which would make the policy factual, but all those early attempts failed. The numerous studies instituted by Congress usually concluded that means had to be determined to classify and grade employees and positions so that compensation could be applied in a relative manner.

A survey of the many appropriation acts and other legislation from 1789 to 1850 reveals that pay inequalities in the federal service became a major source of grievance. In 1836 the government clerks of Washington, D. C., submitted a petition to Congress demanding that some systematic method be used for the determination of the salaries of the some 336 clerks who at that time comprised the personnel of the five departments of the federal service. Another petition submitted in 1838 called attention to the same evils, and, in language that could be plainly understood, asked "that an inquiry be made . . . into the kind and character of the duties of the several clerks in all the departments and subordinate bureaus, and a general law passed, apportioning and fixing salaries to duties, so that all clerks performing like duties shall receive like salaries." * The Senate, under

* Senate Document 71, 25th Congress, 2nd Session, Vol. I, January 3, 1838.

pressure, passed a resolution demanding from department heads certain reports which would show:

the classification of the clerks—in reference to the character of the labor to be performed, the care and responsibility imposed, the qualifications required, and the relative value to the public of the services of each class as compared with the others.

In 1853 and 1854 Congress passed laws which established four grades of clerks, prescribed certain rates of wages for each grade, and reiterated the policies of equal pay for equal work in addition to the co-ordination of departmental pay schedules. However, none of these acts afforded any relief, inasmuch as Congress had done nothing in the way of establishing these procedures, of providing for the personnel to run them, or of setting up a centralizing agency to administer them. The acts raised the compensation of many employees, but completely failed to remove inequities in the federal wage structure.

In 1905 President Theodore Roosevelt appointed a Committee on Department Methods to study, among other things, the compensation of certain grades of clerical positions. In 1907 the Committee's report was completed and it admitted that no foolproof procedure could be recommended, saying, "The chief difficulty in the proposed reclassification of employees will be to make sure that the same importance always be given to certain lines of substantially similar work performed in different bureaus and departments." *

The analysis of jobs, the evaluation of jobs, and the classification of employees developed slowly in private industry when compared to the general growth of other techniques and ideas in industrial relations. When personnel management became functionalized and ceased being an executives' plaything, job evaluation took on significance for the first time. But for years it still remained in the category of a new and unproved method. As early as 1921 the American

* Report to the President by the Committee on Department Methods, January 4, 1907.

Federation of Labor asked its executive board "to attempt to determine a sound basis of wage adjustment. Service rendered by individuals is the only logical basis; but practical applications must come slowly. Manufacturers should take up this problem."

In 1924 the topic of job evaluation was again popularized by group discussions in some areas of industry. In 1926 Merrill R. Lott of the Sperry Gyroscope Company, Inc., wrote a book * in which he detailed the methods which were later materially to affect the point systems of evaluation, methods which today have proved most desirable. Study of original data used by Mr. Lott in 1918 shows that the factors then used were more numerous than those set up in generally accepted modern plans. These factors are listed here, inasmuch as they seem to be the first set of yardsticks to be applied to industrial occupations:

1. Time required to become highly skilled in an operation.
2. Time required for a skilled person to adapt himself to his employer's needs.
3. Number of men in the occupation—the labor supply.
4. Possibility of an employee locating with another company, and still commanding a similar earning capacity.
5. Education required for the occupation.
6. Prevailing rate of pay in the community.
7. Degree of skill, manual dexterity, and accuracy required.
8. New problems, and the variety of the work.
9. Money value of the parts worked on.
10. Dependence upon honesty and personal integrity.
11. Working conditions.
12. Exposure to health hazards.
13. Exposure to accident hazards.
14. Physical effort.
15. Monotony of the work.

* *Wage Scales and Job Evaluation*, New York, Ronald Press.

Many of the factors or characteristics used in 1918 still are vital parts of evaluation procedures. Some of the characteristics of work then used have later been reclassified as personal requirements rather than job requirements.

A number of the original job descriptions that were developed immediately after World War I stated significantly that, "the rates applied to men capable. . ." It is the opinion of the author that at this time job evaluation as it is now known was born. The job descriptions had been set up for rate purposes and classification, and it was only logical that the persons viewing and analyzing jobs should go one step further and apply some sort of an over-all common denominator.

During the period 1920-1929 there was a tremendous growth and development of American industry. Increased wages were a product of the struggle for recognition of the individual workman. This struggle was symbolized by the growth of unions and unionism. Job evaluation had no place in that struggle, because the employee was either a craftsman who negotiated his own rate of pay, or a factory hand who worked for wages set arbitrarily by management. During this period neither of the groups seemed to care particularly how the other group fared. The craft unions, which had created an artificial labor scarcity in the industries they had organized, soon showed some resentment when unskilled persons began to encroach on their work. It can be assumed that factory managers, up until very recently, did not concern themselves with the relative pay rates of different jobs. The goal was production, and their interest centered only on those things which would bring about increased production. Another circumstance peculiar to the times was the fact that the average employable person could go to work for pay at almost any time he so willed, and that seemed of paramount importance at the time. In the ten years following 1929 a new type of vertical union rose to power under the C.I.O., and won immediate popular labor support. With the overdue evolution of these vertical unions also came the

problems of wage relationships, or the evaluation of all jobs, since the vertical unions concerned themselves with the entire working force of a factory. All employees from the most junior and unskilled to the most senior and experienced were now included in the bargaining units, and wage rates had to be negotiated. No longer could a select few enjoy alone the bargaining power earned by their highly developed and specialized skills.

The vertical unions of the C.I.O. were under immediate pressure from their members to produce wage increases as soon as possible. The unions were not only challenged to evolve a means to bring about wage adjustments, but management also was given considerable to think about, for never before had it been faced with bargaining on such a broad scale.

In 1937 the Supreme Court declared the Wagner Act constitutional and clearly established the right of unions to bargain collectively for all employees. This emphasized all phases of industrial relations, and of course raised the negotiation of wage rates and the development of wage structures to first place in importance. The initial results were a series of piecemeal and uncontrolled attacks on industrial wages. In 1936-1937 many employers made vigorous attempts to evade the hampering restrictions of the Wagner Act. The smoldering industrial fight flared into bright flame, and labor consequently attacked all conditions of wages and employment.

In some instances, employers used unilateral job evaluation programs to justify predetermined wage rates. Unions resisted job evaluation in general, not because of the merits or demerits of the plans proposed, but chiefly *because they had not participated in drawing them up*. Such a relationship was characteristic of those years. Both employers and employee representatives had yet to learn the tactics of collective bargaining in its new sense, and often each of the parties had to unlearn many years of planned and open hostility, or of more passive and hidden forms of resistance.

The status of job evaluation should be examined as it appeared in the 1940s, after a decade of violent change in relations between management and labor. During those ten years, unionism, and collective bargaining in particular, had been given a new status under the law. The old and once all-powerful American Federation of Labor had little to offer the vast majority of working men and women as compared with the promises of the C.I.O., and the conflict between these two types of unions, vertical and horizontal, was evident to all. The C.I.O. unions adopted a system of tactics which would enable them to feel out the soft spots in the wage structure of an industry or company, and, having gained rate relief at these points, would then use those same rates to prove inequities in the remaining untouched rates of the structure. Often the employers seemed incapable of developing any real defense against such organized assault. They could only counter with negative defense, and could not justify rates except through use and precedent, which of course did not prove acceptable to the unions.

The voting majority or control of any C.I.O. vertical-type union is held by the employees in the lower third of the wage structure. Most of the inequities in wages could be found in this majority, and hence bargaining usually resulted in increased rate adjustments in this most forceful part of the union membership rolls. Bargaining which had its impetus from this majority served the C.I.O. unions well for the two initial years of organization. Any gains at all were useful publicity in the process of building up membership. As the confusion waned, it became evident that this type of wage negotiation created as many problems as it was supposed to have settled. The early "pressure groups" appeared to be satisfied, but soon discordant rumblings began to be heard from those who had failed to get expected wage increases. The C.I.O. unions were then saddled with difficulties which arose from dissensions of groups within their membership.

Meanwhile, employers began to realize that it was wage differentials which was one of the major troubles which could not be ignored or talked down. These differentials had to be met squarely and dealt with by more precise methods. Simultaneous recognition by unions and management of the real utility of job evaluation as an aid that would help to solve wage disputes marked this period.

It was World War II and its intensified industrial activities which forced the great growth in job evaluation. Terrific strains and stresses on industrial wage structures soon became recognizable everywhere. Old wage relationships meant nothing in the wild scramble for man-power. This was especially true in those industries which had expanded rapidly, and which frequently had no formalized wage plans. Government agencies were overwhelmed with requests for assistance in the achievement of sound and harmonious relations between management and labor. High up on the list of inquiries received by the United States Conciliation Service were requests for information on job evaluation. These requests clearly indicated the necessity for more specific information, and also tended to demand that some kind of uniform job evaluation service be adopted by the United States Department of Labor.

In the latter part of 1944 the Technical Division of the United States Conciliation Service did prepare a bulletin * on the subject, and requested that it be made available to all of the Conciliation commissioners. The bulletin contained an explanation of job evaluation and a discussion of the work of the Technical Division as it related to the subject. This paper appears to have been the only document on the subject prepared by a government agency for government use. Although the demands for a government-approved evaluation plan continued to increase, the Labor Department took the attitude that it was not within its province to pass judgment on the merits of job evaluation as

* Appendix A.

such, or on the comparative merits of any one plan or manual. Publication by the government of any one plan would have been construed by industry as an endorsement of that plan, and would probably have killed all attempts to refine and improve other aspects or details of the work. Approval of one particular plan would have resulted in the same type of situation which would have resulted if the government had placed its blessing on the Bedaux wage-incentive plan, thus indirectly condemning all other types of incentive plans. This attitude of the federal government was in the face of a demonstrated demand from both labor and management for assistance in solving the practical problems of job evaluation which were being encountered daily in private industry. As a result, early in 1945 another division of the Department of Labor, the Division of Labor Standards, proposed to make a contribution to the all-too-scarce literature concerning job evaluation.* This was to be a basic guide planned particularly for supervisors and union shop stewards. It was to be written in simple non-technical language and deal concretely with problems involved in the administration and installation of job evaluation programs. Since a great many of the requests for information came from union representatives it was felt that the Labor Standards' publication should concern job evaluation under conditions of collective bargaining. But a conflict in departments under the same major agency developed—Conciliation Services purposely refrained from setting up a model plan, and Labor Standards wanted to publish detailed instructions for installation and administration purposes. The project did not reach the publishing stage.

Many job evaluation installations have been made by company personnel and many of these installations were supervised by individuals who had gained knowledge of the subject through publications or correspondence with those who had already conducted such a program. This type of

* Appendix B.

"mechanical leadership" usually gave a mechanical evaluation and the resultant wage structure often failed to receive the spark of life that would assure continuity. Something more than mere knowledge of the rules is needed to round out a job evaluation plan. Even though the right words and phrases are used such a program lacks the guiding spirit of a leader. Other installations were directed by outside consultants whose experience of many years has proven that there is little room for pride of authorship among consultants that are trying to get others to adopt their ideas. All leaders in the field of job evaluation must be ready and willing to share the results of their experiences and research. No new device or aid to management and labor can be developed on the basis of secrecy. The lessons learned and the pitfalls avoided must be kept open to all, discussed, and made a permanent part of the record. Only when those persons who aspire to leadership in job evaluation are willing to subject their work to audit, check, and comparison will this specialized field develop uniformly. But in all fairness, there do seem to be indications of a tendency to collaborate on some of the related problems. The all-too-human habit of regarding techniques as secret places the future of job evaluation in a precarious position in the eyes of labor and management alike.

Basic Fundamentals of Wage Structures

Rate inequities are said to exist when abnormal rates are a part of the composite wage structure. Usually these inequities can be attributed to one or more of the following conditions:

1. Lack of an adequate concept of the job's content, or poorly developed job descriptions (if job descriptions exist).
2. Conscious or unconscious favoritism on the part of the responsible management representative.
3. Poorly executed evaluation procedures.
4. Improper classification of employees.

5. Improper measurement of job performance.
6. Unequal pay for equal work.

The true causes of wage inequities are in some instances obscured by the frailties of human behavior, and the results of continued inequities are in all cases costly. This was concisely stated, "There is no single factor in the whole field of labor relations that does more to break down morale, create individual dissatisfaction, encourage absenteeism, increase labor turnover, and hamper production than obviously unjust inequalities in the wage rates paid to different individuals in the same labor group within the plant." *

Employee dissatisfaction is minimized when rates have been established so that they relate to the characteristics of the work being performed, even though the entire wage structure is considerably lower as compared with a high wage structure in which inequities exist. As an example compare the following two structures:

STRUCTURE A		STRUCTURE B	
Minimum rate	\$0.60	Minimum rate	\$0.85
Drill press operator	0.87	Drill press operator	0.95
Maximum rate	1.25	Maximum rate	1.35

In structure A all occupations had been evaluated and rates were established proportionate to the job requirements. In structure B, having a considerably higher minimum rate of 85 cents, the differential between the lowest grade work or hiring rate was too close to the rate of the drill press operator. In structure A the differential was 27 cents per hour, while it was but 10 cents in the higher wage structure. Employees are always quick to sense such injustices as these, as they strike very close to their well-being. Management not always being able to defend such situations sometimes further frustrates employee groups as well as individuals who are forced to continue working in the face of these inequities.

* W.L.B. West Coast Airframe Companies (Case 174, *et al.*).

It should be remembered that in any discussion of attitudes of individual workers as related to their personal positions in the wage structure, due consideration must be given to the human equation. Human nature is fundamentally the same under factory conditions as in offices among white-collar workers. The employee seeks a higher wage not only as a means of bettering his own living conditions, but also for the enhanced self-satisfaction resulting from an improved status in his own competitive wage structure. An analogous situation is the self-appreciation inherent in the titular distinctions of office salary structures.

Wage inequities, when discernible, concern both management and employees. When low employee morale growing from wage inequities appears to be on the increase, management can invariably begin to look for certain results which will vitally affect the operation of any plant. Some of the more evident results will be:

1. Reduced production.
2. Increased unit costs.
3. Increased spoilage.
4. Absenteeism.
5. Increased tool breakage.
6. Increased labor turnover.

It would be well for management to scrutinize and review the wage structure when any one of these problems increases abnormally. By determining and correcting its cause as quickly as possible, there is an excellent chance that the condition has not actually started to weaken over-all plant morale. Often traces of inequities existing in the past linger on for years after they have been corrected. Therefore, to continue gross inequities is in fact defying all good practices for successful labor relations. Nowhere in the entire field of personnel administration is there to be found a better prevention against breakdown of plant morale than a properly created and administered job evaluation program.

Graphic Presentation of Wage Structures

Wage structures at best may seem dull and uninteresting to the uninitiated, unless perchance the structure in question affects the compensation of the individual concerned. It would be expected that graphic presentation of specific wage structures would develop at the same pace as research along salary and wage lines. Unfortunately this is not so, and as a result some of the best techniques used in developing wage structures are wasted for want of a medium to convey the clearest possible picture to those interested. In many cases management's representatives charged with this important work have failed to grasp or interpret the pattern they have attempted to chart, even though they may have been very familiar with all the details that went into the making of the composite.

For years business and industrial firms have retained public accountants to audit the books, ledgers, and inventories of the business. This simply means that qualified and disinterested individuals have checked and audited statements made by the company to stockholders and the public at large. The practice helps to assure investors that their interests are being protected, and that they are getting as much of the earnings of the company as can reasonably be paid to them. Another instance of protection to the public are the licensing laws which demand that experienced engineers plan and check the blueprints for railroad bridges. In addition to these precautions the federal and state agencies concerned require that certain types of building plans be checked by their engineers. As contrasted with these precautions, wage structures have often been left to the whims of individuals or groups who may have little or no experience in developing wage structures that will prove practical in operation.

For a true appreciation of charts presenting wage structure statistics and findings, three characteristic axes must always be considered:

1. The money axis, which is usually shown vertically on a wage chart.
2. The job evaluation axis, which is usually shown horizontally on a wage chart.
3. The frequency axis, which can be shown by three-dimension charts only.

The frequency axis has been used so rarely that its mention may be a surprise to even partially experienced chart makers of wage structures. But this axis is so vital to any complete discussion of wage structures that its usefulness in the proper development of the wage structures necessary in job evaluation must be pointed out. Far too many wage administrators have limited their chart work to the study and presentation of the money and the evaluation axes. Only when wage structures are projected into the third dimension can a comprehensive picture of the wage structure be obtained. The third projection is based on the frequency or number of individual employees working at any particular job rate. The meaning of this new conception can be illustrated by the topographical maps used by the United States Army. These maps reveal instantly to the experienced map reader the nature of the terrain. Hills, valleys, cliffs, and plains are indicated as plainly as though they were labeled. When the same technique is applied to charting wage structures, the concentration of employees at certain places makes it possible to gain new interpretations that were impossible to visualize on the former two-dimension chart. If models of wage structures were to be fabricated out of the same kind of material used in making relief maps, the effect would be similar to the pictures often seen in elementary school geographies. The Continental Divide of the Rockies would correspond to the base line of the former two-dimension chart. A two-axis chart can be utilized only to define the limits of the money values and the evaluations of job requirement, and as such can of course be used with limits. For example, an irregular line on the chart might show that somewhere in the wage

THE HISTORY AND NATURE OF JOB EVALUATION

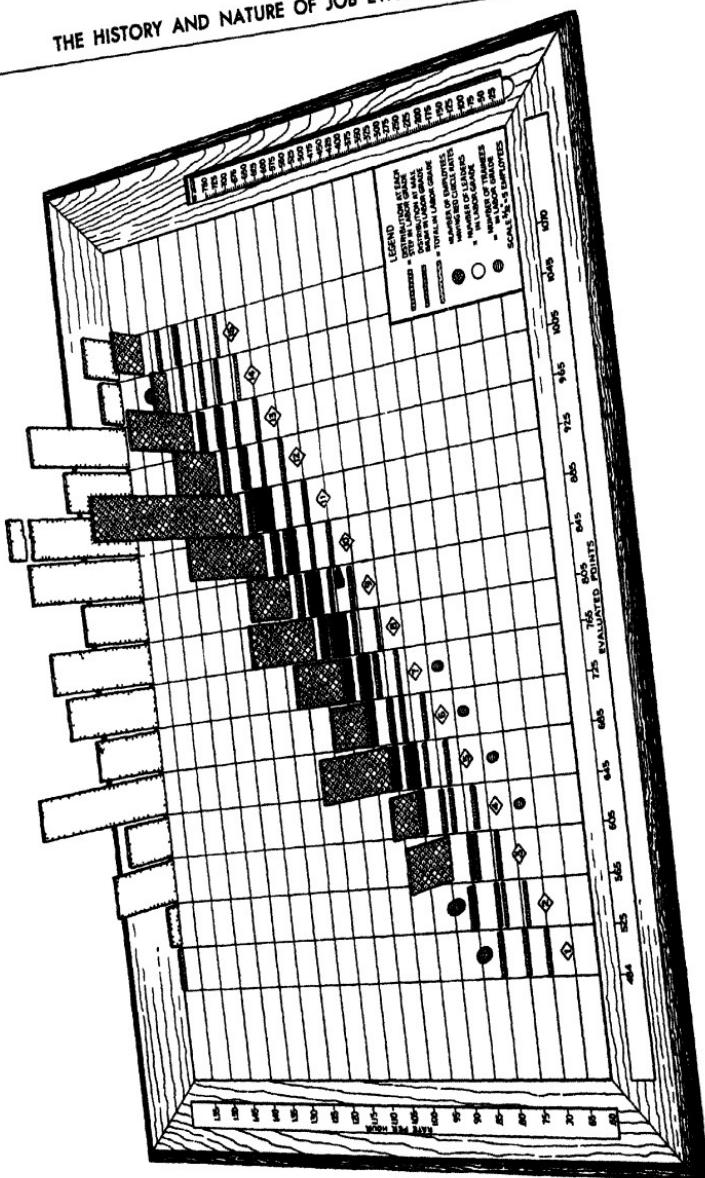


Figure 1.

Explanation of Three-Dimensional Chart Board.

This chart board employs a new form of visual presentation of a variety of related statistical factors. The board illustrates, by a three-dimensional technique, the distribution of employees covered by a joint job evaluation plan at its initial phase, the completion of the installation, and the beginning of the administration. The use of three dimensions enable the observer to visualize graphically all the essential features of the job evaluation wage structure, i.e., labor grades, the range of labor grades in money, the width of labor grades in evaluation points, and the numbers of people at various rates within and outside of their assigned labor grades. The interrelationship of these features is the key to the wage structure and is the purpose and predominant feature of the chart board.

HOW TO READ THE CHART

1. Scale of "Evaluation Points." This scale represents the evaluation points used in recording the value of individual jobs in the wage structure. The scale of 484-1070 points is broken into fifteen segments or labor grades. Each job falls into a specific labor grade according to the total of its evaluation points. The scale of evaluation points is used to measure the width of any labor grade in points.

2. Scale of "Rate per Hour." This scale represents the range in money of the wage structure from the minimum of labor grade 1 (\$0.70) to the maximum of labor grade 18 (\$1.53). The range in money of each of the labor grades can be read from this scale.

3. The Risers and Rods. The height of the colored * risers

and rods indicates numbers of employees at various steps within and outside of the labor grades. The Plexiglass measuring rod, found at right of board, will furnish a basis of measurement of the number of employees represented by any riser or rod.

(a) The height of each green rod (indicated by horizontal lines) represents the number of trainees for classifications falling within the labor grade for which the employee is being trained.

(b) The height of each yellow riser (indicated by vertical lines) represents the number of people at the various steps within each labor grade (exclusive of those people at the maximum of the grade). The steps at which these risers are located represent the rate progression at quarterly reviews by an individual entering the labor grade at the minimum. (c) The height of each black riser (indicated by double cross hatching) represents the number of employees whose rate is at the maximum of the labor grade.

(d) The height of each red rod (indicated by dense stippling) represents the number of "red circle" rates, i.e., employees whose rate is, for various reasons, already above the maximum for the labor grade into which their classification falls.

(e) The height of each maroon riser, at the rear of the board (indicated by stippling), represents the total number of employees in the labor grade. It is the total of the risers in (b) and (c), of the rods in (d) and (a), and it also includes numbers of leaders (the leaders are not indicated on the chart as they represent a relatively small percentage of the total).

* The risers and rods are actually colored, but, for illustrative purposes, a black and white shade medium has been used. Therefore, whenever a color is mentioned, its graphic counterpart is given.

structure there was at least one employee working at that specific rate. Whether the rate applied to one employee or to one hundred was not determined by the chart. A three-dimension chart (Figure 1) permits the observer to see and retain the concepts of money values, job values, and the number of employees concerned as they relate to each other. Such a chart becomes alive and active when the frequency and distribution of human beings is injected into an otherwise dull statistical study.

Job evaluation is primarily concerned with the determination of equitable compensation for these masses. It is true that even without evaluation, certain comparisons of wage rates may be made. Such data as average wage rates and number of employees in certain classifications is frequently collected, but the totals are meaningless. When the values concerning the relative worth of the work performed, the rates paid for each classification, and the frequencies of the distribution are known, the problem of integration is lessened and a structure can be designed which is equitable and impersonal and therefore conducive to excellent employee relations.

ABCs of Job Evaluation

A wage structure attuned for real service in any given plant means that all monetary values of jobs in the structure are relatively true, and that the structure as a whole is aligned with competitive wage structures of the community. Internal balance is therefore achieved by job evaluation processes, and can be checked externally by making corrective adjustments of the terminal points of the wage structure in such a manner that there are no outstanding advantages or disadvantages in relation to local labor markets.

Determination of specific wages for a job involves three primary fundamentals:

1. What does the job require an employee to have?
2. What responsibilities are inherent in the job?
3. To what does the job subject an employee?

The secondary fundamentals are:

1. What is the job worth?
2. Is the employee properly classified?

Job evaluation as such theoretically concerns itself with only the primary factors. True relationships can be established without recourse to dollars and cents, and the moneys paid should never be allowed to affect evaluation processes. Actual job evaluation, of course, is in no way dependent on or concerned with the personal qualities an individual may possess. Only when making practical application of evaluations are the secondary factors considered and studied. Conversion of point values into money values, and the slotting of employees into the proper classifications constitutes execution of these secondary factors.

Basic Job Evaluation Plans

Over a course of years many job evaluation plans of different complexities have been developed which have won varying degrees of management and employee acceptance. It is not the purpose of this text to expound the details of these plans, nor to criticize or condemn certain basic faults which have become apparent in them only after they have been applied. The four best-known plans are described briefly so as to give the student of evaluation some of the development background. It is believed that if evaluation processes are given several years in which to stabilize, the distinctive types that can now be definitely identified will blend into one type which will receive universal acceptance. Two of the plans mentioned have already been relegated to the scrap heap by the persistent refusal of both management and labor to consider them as practical and logical approaches to such an important problem as wages.

The four basic forms of job evaluation are:

1. Point systems.
2. Factor comparison.
3. Job classification.
4. Ranking methods.

1. POINT SYSTEMS

Evaluation methods based on some form of a point system have enjoyed so much popularity as to render the adoption of other methods almost negligible.

Point system technique has been constantly improved since its earliest applications. Much of the success of this form of evaluation is attributed to the fact that it is readily adaptable to joint union and management programs, plus the fact that it has through many years been found to be particularly adaptable and successful in all types of industrial applications.

The National Metal Trades Association's evaluation plan probably gave the point system its greatest impetus, by standardizing installation procedures in a specific industry which happened to be one of the largest in the country. Other industries not allied to the metal trades were constantly thrown into contact with point evaluation. In most cases the principles were adopted and in the course of application were refined and improved.

During the early years of experimentation in evaluation work the General Electric Company proved of great assistance to those industries which contemplated formalizing their wage structures. D. W. Weed, who was in charge of wage compensation, contributed generously of his time and efforts to help beginners in this field.

The point system is gradually absorbing the best features of the other methods, as comparisons of many current evaluation plans show traces of job ranking and classification in one way or another. Eventually, it is expected, a combination of the best parts of proved approaches will be accepted and come to mean true job evaluation.

Point evaluation systems require selection of specific characteristics of work common to all jobs in the industry or business concerned. Each characteristic must be considered as but one aspect of the job and must constitute a means by which that aspect of the job is related to, or measured against, all other jobs. This is accomplished by dividing each of the characteristics selected into numerical gradations, and actually making each characteristic an individual measuring stick. The measurement of the common aspects of all jobs is then a relatively easy procedure, easily understood by both employees and management, and requires no compromising nor averaging of results to obtain the proper job value. Job evaluation by use of point methods generally implies evaluation by group discussion, rather than evaluation by individuals who may or may not constitute a committee. It is believed that the results which are obtainable by means of the point systems are the most definite and defensible of any of the methods now in use. Figure 2 illustrates some of the basic ideas of the point system.

2. FACTOR COMPARISON

The essentials of factor comparison for hourly rated jobs are probably best described by Eugene J. Benge, who was largely responsible for the origination of this method at the Philadelphia Rapid Transit Company. In three papers* he briefly outlined job evaluation according to the factor-comparison method in these words:

Job evaluation undertakes by scientific job study and comparison to determine the relative values of jobs within the limits of the existing wage scale. The factor comparison method of achieving job evaluation does systematically what employees usually do in an unsystematic fashion. Many an employee when seeking a raise cites the skill required for his job as against some other job which is higher paid; or he may cite responsibilities or working conditions or physical effort. Since this is essentially what the factor comparison method does, it

* "Gauging the Job's Worth," *Industrial Relations*, February, March, and April 1932.

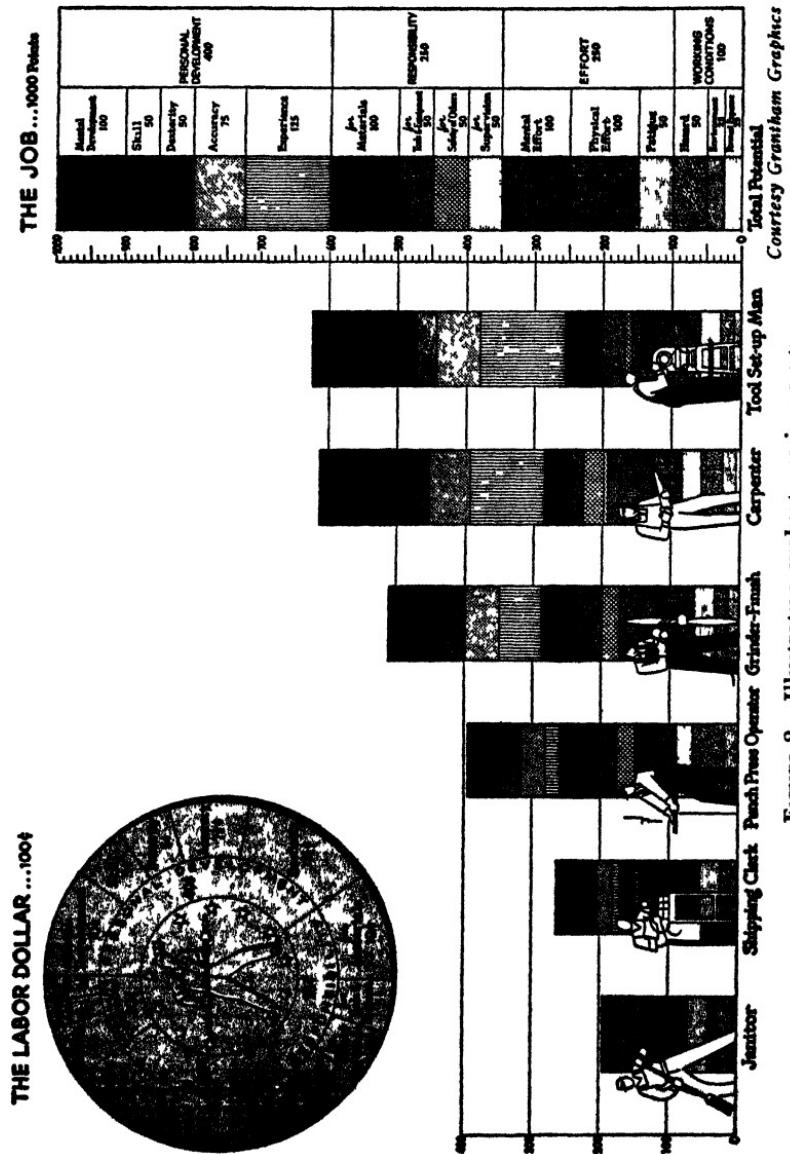


Figure 2 Illustrative evaluations in points.

appeals to employees as fair and understandable. Accordingly jobs are analyzed and compared against five general factors:

1. Mental requirements: Education, intelligence, technical knowledge, fluency, mathematics, etc.
2. Skill: Manual dexterity or observational skill acquired mainly through practice and experience.
3. Physical requirements: Kind and duration of muscular effort; age, sex, height, weight, eyesight, etc.
4. Responsibility: Responsibility for equipment, tools, materials, money savings, and public contacts, and for the work of others.
5. Working conditions: Illumination, atmosphere, hazards, noise, etc.

Preparing a Key Job Scale. A careful job analysis is made, generally by interviewing employees, and the job specification is prepared. This specification is divided into the five factors shown, with appropriate subdivisions. [See Figure 3 of the present volume.]

The factor comparison method gets its name from its method of operation. For instance, the mental requirements of each job are compared against the mental requirements of selected key jobs and this procedure is followed for all five factors of every job.

Obviously the crux of the method lies in the preparation of the job comparison scale of key jobs. At the outset ten or fifteen possible key jobs are selected, representing all levels of difficulty and all major departments. These tentative key jobs are intensively analyzed and through a detailed procedure of ranking them in the five factors and of apportioning wage rates among these five factors, a job comparison scale is finally prepared.

The exact procedure for accomplishing this is too detailed for full presentation here, but has been published elsewhere. A typical job comparison scale is shown in Figure 4 [of the present volume]. Perhaps ten to twenty per cent of the entire time devoted to a job evaluation will be spent in preparing this job comparison scale. Each job must meet certain rigid tests before it will be selected for inclusion. Some of the tentative key jobs which fail to meet these tests will be rejected for use in the Key Job Comparison Scale.

A single example will suffice to illustrate the use of the job comparison scale shown in Figure 4 [of the present volume]. You have before you the specification for an electric welder in your shop, shown as Figure 3 [of the present volume]. After you have read the entire specification you concentrate on the items listed under mental requirements. You ask yourself whether the mental requirements are equal to those of a pattern maker, of a sub-station operator, of a machinist 1, of a pipe fitter 2, of a painter, etc. Perhaps you conclude that the mental requirements are greater than those of pipe fitter 2 but less than those of machinist 1, and

Job Title	Electric Welder--Shop	Dept.	Maintenance	Division	Salvage	Normal Force 1
Duties Welds cracked and broken bases, rods, support brackets, etc. Repairs salvaged parts. Rebuilds worn surfaces. Does the necessary welding in making safety guards. Some spot welding of miscellaneous nature						
Menial Effort	Skill	Physical Effort	Responsibility	Working Conditions		
<u>5-year general education</u> <u>Kind of special education</u>	Kind of equipment Fixing metal parts in position for welding. Connecting one electrode to work, and holding other electrode in hand. Striking arc by momentarily touching work. Joining metal by moving arc along edges to be joined in order not to burn metal.	Kinds of equipment Lifting parts, mostly weighing under 20 pounds. Holding electrode	Kind of equipment Welding machine, electrodes, table	Place Indoor	Type Shop and bench work.	
<u>Kind of work knowledge</u> <u>Effect of heat and electricity on various metals--correct welding heat in order not to burn metal.</u>		Kind of tools Shield, goggles, hood, heavy gloves, files, hammer.	Surroundings Noisy, dirty; crowded.			
<u>Mathematics used</u>		Kinds of materials Iron and steel parts.	Atmosphere Dusty, draughty			
<u>Reads welding blueprints</u> <u>Prepares records</u>	X Dexterity Inexperienced—time to learn 2 years Desirable prior experience Acetylene welder or welder's helper.	Operation Repetitive X Intermittent Age limits 25 to 50 Minimum height 150 lb Minimum weight 150 lb Ser: M, A, or F— Color: W, X, or B— Much fatigue —Very active work —Great strength X Good eyesight —Color discrimination Other physical factors Strong lungs	Kind of property Semi-automato. Machine parts.	Illumination Poor	Hazards Burns, shock, eye strain	
<u>Instructs others</u> <u>Monitors</u> <u>Distractions</u>	—Receives constant supervision	For savings—how Salvaging old parts For work of others	For employee contact	Other		
<u>Personal Qualities Needed</u> <u>High intelligence</u> <u>Patience</u>	Company job which train for Apprentice welder.	Other responsibility				

Figure 3. Job specification for hiring purposes.

Job Comparison Scale					
Cents	Mental Effort	Skill	Physical Effort	Responsibility	Working Conditions
40					
39					
38					
37					
36					
35					
34					
33		Pattern Maker			
32		Machinist No 1			
31					
30					
29					
28				Substation Operator	
27	Pattern Maker				
26					
25	Substation Operator				
24					
23					
22	Machinist No 1		Rammer		
21		Substation Operator			
20		Pipefitter No. 2			
19		Painter	Poleman		
18			Laborer		
17					
16				Pattern Maker	
15					
14		Drill Press Operator	Pipefitter No. 2	Machinist No 1	Rammer
13		Carpenter's Helper			Poleman
12			Machinist No 1	Pipefitter No. 2	Laborer
11	Pipefitter No 2		Painter	Drill Press Operator	Pipefitter No. 2
10	Painter		Pattern Maker	Painter	Painter
9	Drill Press Operator		Carpenter's Helper	Carpenter's Helper	
8	Carpenter's Helper		Drill Press Operator		Machinist No 1 Drill Press Operator
7		Poleman		Poleman	Carpenter's Helper
6	Poleman				Pattern Maker
5	Laborer			Rammer	
4		Rammer	Substation Operator	Laborer	Substation Operator
3	Rammer	Laborer			
2					
1					
0					

Figure 4. Factor comparison scale.

allow 16 cents for the mental requirements. Similarly, you may determine that the skill of the welder's job is worth 28 cents, and the physical effort 13 cents, the responsibility 13 cents, and the working conditions 11 cents.

Pooled Judgment. Each member of your committee is performing a similar process of comparison and is recording his votes. By adding the votes and averaging, the consensus of opinion of the committee as to the value of the shop welder is established, in comparison with a number of well-known key jobs in the company.

When all non-key jobs have been valued, a special technique is available to prove or to modify the values of the key jobs themselves. The final result may appear as follows:

JOB	MENTAL EFFORT	PHYSICAL EFFORT	SKILL	RESPONSIBILITY	WORKING CONDITIONS	TOTAL
Welder	16¢	13¢	28¢	13¢	11¢	81¢
Painter	10¢	11¢	24¢	11¢	10¢	66¢
Carpenter's helper	8¢	12¢	11¢	4¢	8¢	43¢

3. JOB CLASSIFICATION

This method has been popularized mainly by various civil service commissions throughout the United States and Canada and although in some instances it has been adopted for evaluation of industrial jobs it is not commonly used for this purpose. In some respects position classification is still in course of development. As with all evaluation methods, the precise way in which labor grades should be arranged and the forms and details of job descriptions are phases which will justify careful study and recording in the days to come.

In classification, certain stages or bench marks are established prior to the actual classification work. But one weakness must be noted, namely, that in establishing these bench marks, past concepts of the job values are involved. Experience in wage evaluation has proved that past concepts of

values may approximate as much as 50 per cent of the values finally determined. If these past concepts of job values are used, there can be no genuine desire present to develop a workable wage structure, even though classification may assist in removing some of the more apparent wage inequities. Deviations from past concepts would be considered as radical departures from the existent wages. This method of determining wages lacks flexibility: it does not provide the mechanics for promptly determining accurate values for jobs which may change in content or in combination.

The method is rapid, and can easily be understood by those entrusted with the work. Its outstanding defect is to be found in the actual interpretation of the bench marks which may have been set up to act as guide posts. As an example:

CLASSIFICATION	DESCRIPTION OF WORK	WAGE	
		MINIMUM	MAXIMUM
21	Manual operations requiring knowledge of a limited number of operations. This class of job includes some filing and simple inspection; no tolerances; no written reports are necessary.	0.70	0.80

It is readily seen that many of the characteristics of work which go toward making up the requirements of the job being measured are conspicuous by their omission. A range is established but such important job characteristics as working conditions, physical effort, mental effort, and responsibilities have not been mentioned. It would be possible to group in one classification two extremely different jobs which still meet the specifications of the bench marks. For instance:

SIMPLE ASSEMBLY OPERATION: employee has excellent working conditions, few responsibilities, no hazards, light work.

FOUNDRY SHAKE-OUT MAN: typical foundry working conditions, hazards, heavy work.
(Foundry laborer)

Because it is difficult to set up intelligent and comprehensive bench marks, the job classification method is not an accepted practice in industry. It works much better in evaluating clerical jobs, where the differentials in working conditions, responsibilities, occupational hazards, and the physical effort required are minimized. For details on the origin and practical use of this evaluation method it is suggested that a report * submitted to the Civil Service Assembly be studied.

4. RANKING METHOD

The ranking methods consist, in essence, of arranging jobs in the order of their importance, and then grouping the list of jobs into labor grades. Specific forms of ranking may take into consideration some of the various job characteristics. Final rates are established by reference to the relative position of each of the labor grades. This system has often been referred to as the "card-sorting" system, since the means for shuffling the jobs was usually a system of 3-inch by 5-inch file cards, on each of which was written the name of a job, and what other information was deemed necessary to identify it. After the cards were finally arranged in order of increasing value, according to the estimates of the individual or group making the ranking, letters of the alphabet or numbers were noted on each card to establish the relative position of that job against the other jobs.

The advantages claimed for this method are rather dubious when one considers the resultant evaluations. The procedure was rapid, and from an employee standpoint seemed fair and understandable. From a practical point of view it was almost impossible to secure raters whose concepts of

* Committee on Position Classification and Pay Plans in the Public Service: *Position Classification in the Public Service*, Chicago, Civil Service Assembly of the United States and Canada, 1942.

job values were uniform. There was little in this method to defend the results once the ranking had been done, inasmuch as job descriptions and other records were seldom available to review evaluations with dissatisfied employees. Nevertheless, this method was a considerable improvement over any system which set rates arbitrarily. From management's viewpoint it was an inexpensive method. It is doubtful if the best results of such a method would be acceptable to either the unions or the management of today. Even without full employee acceptance this type of evaluation may have temporary value in adjusting rates where exceptionally quick action is needed, but it should be given no consideration in the determination of a permanent wage structure.

Ranking is capable of showing differentials in values of jobs, but it cannot define the degree of the differential involved. Ranking thus poses as one method of an orderly approach to wage determination, and yet at the same time its unascertained quantities are passed on to the larger subject.

2. DETERMINATION OF ACKNOWLEDGED JOBS

Establishing Nomenclature of Jobs

WHEN the United States Department of Labor began the compilation of a job dictionary, it was realized that no uniform method of designating job names existed. Industry grew from small units to large corporations with many branches, and carried job names into new communities. This is perhaps best illustrated by the history of packing houses. In the beginning, one or two men did all the butchering in the small slaughter houses. As various parts of the work became mechanized operations, one or more of these jobs were made the direct responsibility of one operator, and soon a name was given to that job. One of the first operations dealt with killing the animal, and since this eventually was done with a specially designed hammer, the operator doing this work was soon known as the "knocker," and the operation was called "knocking." But such nomenclature did not develop simultaneously or smoothly. The packing house operators did not choose the same names to designate the same work. Where one company called the operation "knocking" there were others who chose the job title "bumping" for precisely the same operation. Only as the packing industry grew and an interchange of employees began did any semblance of uniformity in job nomenclature begin to appear. Even today there remains much to be accomplished in attempting to establish uniform naming of similar operations in industry. Many jobs are known by the trade names of the machines operated, or a combination of the trade name and the type of machine concerned.

All job evaluation programs demand the establishment of a listing of all jobs which are to be measured. This list

TO: ALL MEMBERS OF ADMINISTRATIVE COUNCIL
ALL MEMBERS OF OPERATING COUNCIL
ALL PLANT MANAGERS
ALL ASSISTANT PLANT MANAGERS
ALL MANUFACTURING SUPERVISORS

No. and File _____
From _____
Date _____
Subject JOINT JOB EVALUATION PROGRAM

In order to determine the fairest rate of pay for all jobs coming under the jurisdiction of the bargaining unit, the Union and The Company have agreed to co-operate in a Joint Job Evaluation Program, that is, in a study and evaluation of each and every hourly rated job.

As a result of these studies, the company and the union will be able to determine what any particular job is fairly worth in relation to all the other job values. Many factors enter into these calculations, such as knowledge, skill, experience, working conditions, physical effort, etc.

To conduct the work, I have appointed the following Management Members to the Joint Committee:

Howard K. Jones
William R. Whitaker, Jr
Malcolm N. Hill
Andrew X. Jackson

The Union has named its Members as follows:

Edward Baxter
D. Smith Fitzgerald
Seymour Scheiner
Thomas Parkinson

The Joint Job Evaluation Committee has not the authority to make recommendations under any circumstances as to any individual's rate. It has no authority to measure the quality or the quantity of any individual's work. The Committee will confine its work strictly to the evaluation of the job itself, and not the person performing the particular job.

The work of the Committee will be exceedingly tedious and difficult. The information necessary to the success of the program will have to come from you and me, and the rest of us. The Committee will have to get to actual facts.

We believe that Job Evaluation will prove to be very worth while and will work for the mutual interest of all in going toward a common goal as a factor in The _____ wage administration, namely, equity, harmony, and fairness.

In the matter of co-operation and other requests for information, I ask your wholehearted co-operation. Mr. _____, Salary and Wage Administrator will have direct charge of this work.

Figure 5. Authorization letter.

TO: ALL FOREMEN
ALL STEWARDS

File and No 1125-56

Date _____

Subject LIST OF
ACKNOWLEDGED JOBS

In the meetings of the Joint Job Evaluation Committee the attached list of jobs has been developed as being representative of all occupations and classifications which are performed in all or any of the plants.

You will understand that it is almost impossible for any one person or any committee to make up such a list without some kind of assistance. We are therefore asking that you check this list for the jobs or occupations with which you are familiar.

If you have any corrections to make, such as omissions of certain jobs--or if there are jobs or occupations in this listing that you feel are not necessary--please make your comments on the listing and send through company mail to the Joint Job Evaluation Committee Room, 3rd Floor, A Bldg. Room 62-94. Because all meetings having been scheduled, it is important that all replies be in the mail not later than Thursday, May 6.

We have asked for your assistance because of your familiarity with the jobs and classifications. If you have no comments to make, it is not necessary that this list be returned.

Please be assured that your aid and co-operation will be appreciated.

JOINT JOB EVALUATION COMMITTEE

s/ Trez Thompson
Secretary

Figure 6. Letter to foremen and stewards accompanying list of acknowledged jobs.

contains the names of all the jobs which exist at the time of the study, or are acknowledged by the job evaluation committee as of sufficient importance to be classed as separate jobs. For example, a company may have the classification "lathe hand," into which have been thrown all operators of

Figure 7. Departmental list of acknowledged jobs.

lathes, regardless of lathe size, type, or utility. But it is quite possible that in a large plant this one classification might be broken down for job evaluation purposes as follows:

1. Automatic screw machine, single spindle, small.
 2. Automatic screw machine, single spindle, medium.
 3. Automatic screw machine, single spindle, large.
 4. Automatic screw machine, multi-spindle.
 5. Automatic turret lathe..
 6. Bench lathe.
 7. Bench lathe, second operations.

8. Engine lathe, large.
9. Engine lathe, medium.
10. Turret lathe.
11. Vertical turret lathe.

This example is only one of many occupational classifications and each of these sub-classifications is usually broken down into the A and B skills in common practice.

The logical method of determining the master list of acknowledged jobs is to list by departments all of the operations which have, according to past practice, enjoyed the distinction of an individual job name. This list will prove ample as a starting point. (See Figures 6 and 7.)

Use of Existing Occupational Classifications

Discarding of the names of many operations which have been in use for some time in favor of new titles is considered an unwise practice. Employees become accustomed to the nomenclature of jobs, and it is better to let the names of jobs change according to a directed plan. For example, a job in the foundry that traditionally has been known as "stoney knock-out operator" should not suddenly be changed to "shake-out operator B." In large plants the possibility may exist that jobs which are essentially the same have been given different names. The names of these similar jobs must be unified before a complete list of jobs can be prepared. An example often found is the occupation sometimes named "departmental clerk," sometimes "factory messenger." The actual work performed by each of the persons may be found to be the same, but for some unknown reason the jobs have carried different classifications. The purpose of determining the acknowledged jobs is to set up the minimum number of jobs that have to be measured, and yet provide a listing that will show all jobs which are sufficiently different in some way or another to warrant individual evaluation.

Elimination of Obsolete Titles and Classifications

After a listing of all acknowledged jobs has been prepared, copies should be distributed for comment to the foremen and stewards of the respective departments. These comments may be suggested additions to or eliminations from the listing. Since this group of employees is at the working level, it should be in a position to bring the list up to date readily. It may be difficult to make the foremen and the stewards understand the purpose for which the listing is being prepared, but once they do clearly understand the reason, a practical listing usually results. During the course of listing jobs many practices will be uncovered which have been permitted to exist because no one has taken the time or trouble to review the nomenclature of jobs. Old-model machines may have been replaced by new ones and yet the old name of the job carried over to the modern machine. To show how easily this practice can occur, there is the following operation: the former job consisted of washing and cleaning machined parts and was entirely a manual operation. When the volume of work increased and the company bought a mechanical washing machine, it was only natural that the hand-washer should inherit the new machine. The individual concerned was formerly classed as a "laborer" and the old job was listed as "labor." Even though a new machine had been acquired and the characteristics of the work had definitely changed, in this instance the company still classified the operator as a laborer even though the operation on the books had been changed to "washing room expense."

Combination Jobs

In all job evaluation programs the puzzling phenomenon of combination jobs will probably arise sooner or later to complicate the evaluation committee's work. A combination job usually exists because there is not enough work of

a specific nature to keep an employee busy during his regular working day, and consequently other work is added to utilize fully the employee's time. There are other reasons for combination jobs, such as intermittent work which has to be done at specific times in processing operations, or work poorly planned or scheduled. Combination jobs have a habit of appearing for a while and then seeming to be eliminated completely. This situation can be easily understood by a study of the volume of work passing through the operator's workplace. As work volume decreases more men have to cease handling one or two special operations, and are often forced to operate machines in very different circumstances. Where such a condition is likely to occur, it is best to break the so-called combination jobs into separate jobs, so that descriptions may be formulated for each, and each job evaluated. If later on it becomes necessary to operate with combination jobs, the incumbent doing such combination work would be paid at the highest rate of any of the component parts. A tool crib keeper-tool sharpener job may exist. Certainly the characteristics of these two jobs are different, and evaluation would show the degree of difference. If there was not sufficient work to hire two employees, the logical move would be to combine the jobs. A combination job would then be established, and the incumbent paid at the higher rate. However, should work volume again increase there is the established job of tool crib keeper with its determined value, and there would be no justification in hiring a new man at the same rate as was paid the man who did the combination work.

Differentiating One Job from Another

After the initial determination of job names, a further classification must be made before job descriptions may be developed. Conditions involving skill, working conditions, and physical effort need to be studied briefly before job names can be finally settled. A job entitled "elevator oper-

ator" might have been on the initial list, and was supposed to have covered the operation of both freight and passenger elevators. It is apparent that the physical effort of the freight elevator operator, who in this particular case was expected to assist the "move men" in getting loaded trucks off and on the elevator, is considerably higher than the physical requirements of a passenger elevator operator. The overall title of "elevator operator" is therefore not satisfactory, for actually two different jobs exist.

A variance in skills required by one job is a never-failing signal that that job should be broken into multiple jobs. The milling machine can be used to illustrate the point. Certain operations on the milling machine will require the skill and ability of an operator to set up the machine, check the first part, and operate the machine. This type of work requires high skill and complete mastery of the machine. Accordingly such a job should be listed as "milling machine operator A." Such a designation would indicate that the operator would be expected to perform in a satisfactory manner on any type of operation common to milling machines. The next level of skill might involve work which limited the setups to a few which were repetitive and unchanging. Such a job would not have the broad requirements of designation A and would be named or listed as "milling machine operator B." The lowest skilled work on this machine would be the work which was done by an operator merely in feeding the machine and removing finished parts. In such a case no skill would be required to make any setups. Such a job would be listed as "milling machine operator C."

A great many jobs will naturally fall into classifications which require a single skill only. Some typical examples are:

Beltman	Garage attendant	Lift truck operator
Car washer	Glazier	Locksmith
Charwoman	Hand trucker	Matron
Elevator starter	Laborer	Piece marker

Other jobs will arise continually which require further consideration before the list is finally approved. At first the classification "crane operator" might appear to be broad enough to cover all the crane operations in the plant. Upon closer inspection and study of the actual jobs, the responsibilities of a crane operator in a large foundry for the safety of employees on the foundry floor might be considerably more than those attached to crane-operating jobs in another section of the plant, even though the same size and type of crane was involved. The difference would lie in the fact that a foundry crane might transport large masses of molten metals, which at best is a hazard greatly exceeding those attendant on the control of the movements and transportation of certain dead weights.

A safe guide to use in the final determination of the listing of acknowledged jobs is simply to question whether or not the job in dispute is sufficiently different to merit individual measurement. Not all of the supervisors and the stewards are likely to agree with the refinements of job classification as originally submitted to them and there will usually be natural but honest arguments as to why certain jobs should or should not be listed. Experience has proved that it is always better to have too many jobs on the initial listing than to start the program and then find that some jobs have been omitted. Usually some of the jobs that were the subject of argument at the start, liquidate themselves in the initial processes of writing job descriptions. From observations of many lists of acknowledged jobs, it is estimated that the initial listing usually shrinks 10 to 15 per cent.

Numbering Jobs

When all jobs on the listing have been finally approved, job numbers should be applied to each. These "numbers" may be Arabic numerals, letter prefixes, or a combination of both. Frequently it is found that no job numbers existed

prior to the time of the evaluation, and in those instances numbering of jobs for ease of reference does not in any way interfere with any existing procedures. Where job numbers do exist the numbering process requires slight additional work to sandwich the new jobs designated into the existing series at their proper places. Small evaluation programs of course would not require numbered jobs for reasons that are self evident. In those programs where the possibility exists that the list of acknowledged jobs may run as high as three to five hundred a special treatment should be given the numbering procedure. Almost an unlimited number of combinations can be developed to serve not only as a code for accounting purposes but equally as well for ease of reference, which is the primary purpose.

One form of the prefix system is shown in the listing below, giving an abbreviated symbol for each major type of work or division of a plant:

Assembly	As	Maintenance	M	Salvage	Sl
Core room	Cr	Paint shop	Ps	Shipping	S
Foundry	Fd	Plating	P	Tool room	Tr
Machine shop ...	Ms	Receiving	R	Woodshop	W

Such a system of prefixing the job numbers permits great flexibility for present and future administration and under it the average job evaluation program requires no job number longer than two digits. This system in application would then be:

Assembler A	_____	As-1
Assembler B	_____	As-2
Assembler C	_____	As-3

Companies which have tabulating equipment might desire to develop a numbering system that would give them even greater flexibility, and which might ultimately become part of the personnel records. A detailed explanation of such a code is illustrated as follows:

ONE JOB-CODE SYSTEM

The occupational code or job number is always a four-digit number. The first digit of the code identifies the grade of the job. The last three digits identify the occupation. For example, the code for assembler A is 1001. The first digit designates classification A, whereas the last three digits identify the classification as "assembler." The last three digits will always be 001 for the classification "assembler," but the first digit will vary with the grade. Thus an assembler B has the code number 2001. Other numbers used as a first digit might have the following significance:

1	Grade A	6	Leader
2	Grade B	7	Learner
3	Grade C	8	Apprentice
4	Grade D	9	Undesignated
5	Grade E		

For further examples see Figure 8.

JOB EVALUATION NUMBER	JOB CODE NUMBER	MAINTENANCE
155	9083	Beltman
156	9084	Commercial refrigeration serviceman
158	9085	Furnace mason
159	1086	Carpenter A (maintenance)
160	2086	Carpenter B (maintenance)
161	9087	Cement mason (maintenance)
162	9088	Fireman (Boiler house)
163	1089	Gardener A
163-B	2089	Gardener B
164	9090	Glazier
165	9091	Helper, trades
166	9092	Housesmith
167	9093	Laborer, grounds
168	1094	Locksmith A
168-B	2094	Locksmith B
169	1095	Maintenance mechanic A
170	2095	Maintenance mechanic B
171	1096	Heating, ventilating, and air conditioning man A
171-A	2096	Heating, ventilating, and air conditioning man B
172	1097	Millwright A
173	2097	Millwright B
174	2098	Utility man B (maintenance)
175	9099	Oiler
176	1100	Painter A (maintenance)
177	2100	Painter B (maintenance)
178	1101	Pipefitter A (maintenance)
179	2101	Pipefitter B (maintenance)
180	1102	Plumber A (maintenance)
181	2102	Plumber B (maintenance)
182	9103	Pump serviceman
182-A	9104	Pump serviceman (deep well and sewage)
183	9105	Sign painter
184	9106	Tile and bricklayer
185	9107	Cabinet maker (maintenance)
186	1108	Tinsmith A
189	2108	Tinsmith B
190	9109	Tractor operator, grounds
191	9110	Tree surgeon
192	1111	Welder A (maintenance)
193	2111	Welder B (maintenance)

Figure 8. Occupational coding of jobs.

3. SELECTION OF JOB CHARACTERISTICS

Determination of the Common Denominator

SOME VERY OLD practical advice can be stated: If a person is confronted with a problem that is too large for him to handle, he should divide the problem into small parts. A problem thus broken down lends itself to ease of solution. Such a process forms the basis for the use of characteristics of work, or factors, as they are sometimes called. A workman may say that his job is hard, and that at the end of the working day he returns to his home physically exhausted. Another man may state that he is mentally tired, and still another looks forward to the opportunity of enjoying the clean and quiet atmosphere of his home. In each of these jobs, the men involved would place different emphasis upon the physical effort, the mental effort, and the working conditions which were requirements of his job.

To devise a measuring stick which is capable of evaluating any job within certain definable limits, it is necessary, first, to see if it is possible to determine a common denominator. Study of job evaluation plans would indicate that many characteristics of work have been considered by various companies. The vast majority of these characteristics were devised from round-table discussions, and resulted from individual thought and honest conviction. Some of the best results have been obtained by asking individuals point-blank to name the most important characteristics of work in their jobs.

The second step in job evaluation is the determination of those characteristics which are to be used in measuring jobs. Committee members should be asked to suggest characteristics which they believe should be considered in developing the common denominator. Many of the suggestions

will not meet with the unanimous approval of the committee, but in the initial exploration for possible characteristics, all suggestions should be recorded. The secretary of the committee should accordingly list all suggestions as they are made, without comment at that time. Suggestions for the average job evaluation committee list of characteristics of work will include all or most of the following:

MISCELLANEOUS CHARACTERISTICS OF WORK

Mentality	Dependability
Precision	Loyalty
Complexity	Enthusiasm
Intricacy	Injuries to self
Analysis	Injuries to others
Weight lifted	Complexities of operations
Strength	Knowledge
Originality	Mental development
Ingenuity	Safety to others
Dust	Observation
Fumes	Reliability
Connected expense	Confidential matters
Honesty	Overcrowding
Concentration	Working conditions
Dexterity	Training period
Planning	Previous experience
Skill	Education
Leadership	Responsibility for damage
Accuracy	Speed
Memory	Discretion
Adaptability	Working conditions
Judgment	Attention
Hazards	Accidents
Supervision of others	Eye strain
Monotony	Glare
Talent	Tool cost
Opportunity for advancement	Advanced schooling
Fatigue	Discrimination
Steady nerves	Contacts with public
Supervision received	Contacts with other departments
Difficulty	Sobriety
Aggressiveness	Alertness
Imagination	Willingness

Ability to work with others	Carefulness
Supervisory responsibility	Profits of company
Responsibility for quality	Age
Setup ability	Prevailing wages
Resourcefulness	Health
Mental application	Clothes spoilage
Foresight	Disease
Versatility	Heat
Endurance	Noise
Irregular hours	Dirt
Physical effort	Oil
Variations of material	Responsibility for records
Tact	Ventilation
Co-operation	Humidity
Fairness	

There have been no new developments in standard characteristics of work for ten years or more. The fact that many companies which are widely separated from each other, either in distance or in type of product, have arrived independently at the same general characteristics would seem to indicate that this list is fairly comprehensive.

It is recommended that one full session of the committee be devoted to discussions of characteristics in general. At the following meeting the secretary would provide each member of the committee with typed copies of the suggestions previously made. The average committee member will study the list and then appear to be hopelessly confused when confronted with selecting the proper factors from such a long list of potential factors. He is usually conscious of his responsibility and awed by the magnitude of the job. Many of the characteristics will be rejected by committee action on first inspection. The committee will probably grope about for some time unless some orderly method of elimination is provided. By inspection of the listings it is seen that many of the suggested characteristics readily adapt themselves to grouping. For example, all of the following would be classified under the general heading of "working conditions":

Acids	Fumes	Noise
Cold	Glare	Oil
Dirt	Heat	Overcrowding
Dust	Humidity	Ventilation

Other major groupings can easily be established by a breakdown of the complete list, and the process of elimination carried on from that point of the groupings. A classification of characteristics might group as follows:

MAIN CHARACTERISTICS	SUB-CHARACTERISTICS
EDUCATION	Advanced schooling Knowledge Memory Mental development Mentality
EXPERIENCE	Adaptability Age Complexity of operation Previous experience Training period
SKILL	Analysis Complexity Dexterity Difficulty Discrimination Foresight Imagination Ingenuity Intricacy Judgment Originality Planning Resourcefulness Setup ability Speed Talent Variations of materials Versatility
PHYSICAL EFFORT	Fatigue Strength Weight lifted

MAIN CHARACTERISTICS SUB-CHARACTERISTICS

MENTAL EFFORT	Alertness
	Analysis
SUPERVISION	Attention
	Blueprint reading
SUPERVISION RECEIVED	Concentration
	Memory
RESPONSIBILITY	Mental application
	Observation
WORKING CONDITIONS	Contacts with other departments
	Leadership
ACCURACY	Supervision given
	Supervision required
	Supervisory responsibility
	Complexity of operations
	Originality
	Seriousness of possible error
	Accuracy
	For damage to equipment
	For damage to materials
	For injury to others
	For quality
	Supervision of others
	Supervisory responsibility
	Acids
	Cold
	Dirt
	Dust
	Fumes
	Glare
	Heat
	Humidity
	Noise
	Oil
	Overcrowding
	Ventilation
	Calculations
	Measurement
	Selections
	Time
	Tolerances
	Weight

MAIN CHARACTERISTICS	SUB-CHARACTERISTICS
HAZARDS	Disease Eye strain Health Injuries to self
CONNECTED EXPENSE	Clothes spoilage Tools furnished by operator

There is no fixed rule that can be used by a committee in selecting the proper characteristics. Many successful job evaluations have been based on plans containing numerous characteristics. An equal number of plans employed only a few well-chosen factors. The greater the number of factors, the longer it will take to do the actual evaluation work, but there is the additional advantage of increasing the accuracy of the values determined. Somewhere between the two extremes exists the practical minimum or maximum number of factors which the job evaluation committee may decide is adequate for its purpose.

A long and careful study of the various characteristics which have been used in evaluation programs indicates that the seven most important probably are:

1. Education.
2. Responsibility.
3. Accuracy.
4. Skill.
5. Physical effort.
6. Mental effort.
7. Working conditions.

After the committee has selected the characteristics to be used, each of the individual members should expend some effort in developing uniformity of understanding regarding the factors. Too frequently the committee will rush into the next step of weighting the characteristics without having a clear idea of what is to be weighted. Some might interpret "experience" to mean the length of time necessary actually to become proficient on a machine, while others might discount the short learning-time a machinist might require to become familiar with an improved type of

machine, and measure this phase of the job requirements against experience gained on similar machines. Properly to determine and record true definitions of characteristics tests the ingenuity of any committee. The clearer the definitions, the more effective will be the measurement. All "weasel words" and other phrases that might later prove ambiguous should be avoided. A little time and effort spent at this stage of the work will save hours later on by eliminating any possibility of multiple interpretations.

Finally, the selection of characteristics must be determined by the conditions actually present in the plant for which the plan is being developed. If the reader takes the time to study the commonly used characteristics and their definitions, he will discover that very few of them are worded exactly alike, and that there may even be contradictions in them. One manual might define "experience and training" as the measure of the amount of time necessary to bring the average operator up to normal operating efficiency, while another plan says that "experience on related operations can be substituted in the determination of the value of credit to be apportioned to the job." Most companies have agreed that selection of too many characteristics for evaluation makes the program unwieldy and slows up evaluation in general. Occasionally in an attempt to hasten the process certain characteristics have been combined. Where such characteristics as "initiative" and "ingenuity" have been combined to make "initiative and ingenuity," the compromise has usually resulted in weakening the entire evaluation. Because two distinct requirements of work are merged does not mean that the job requirements relating to each will be measurable in the combined form. Such a combination of factors usually makes the evaluation worthless. Were it possible to use combined forms of characteristics, then it would not be necessary to set up individual characteristics. To go one step further, this is a tendency toward evaluation of jobs on an over-all basis, and that, of course, is nothing but the technique of the old ranking method.

4. WEIGHTING OF JOB CHARACTERISTICS

Characteristic Differentials

JOB EVALUATION literature is conspicuously silent concerning the procedures advanced for weighting the characteristics used in point evaluation programs. Most of the point evaluation systems require that the characteristics be "weighted," which is merely the fixing of arbitrary values of the maximum worth of a particular characteristic as compared with the maximum evaluation possible of the job as a whole. Because this phase of job evaluation has been so controversial, advocates of the various point systems have had a difficult time substantiating final evaluations. Lack of standardization on this subject is an extremely healthy situation, for if uniform weighting were to be established for all plans then there would be justifiable grounds for disputing the results. Because it has previously been stated that the more commonly used characteristics are inherent in all jobs does not mean that the degree of importance in all is the same. The requirements of a highly skilled occupation such as tool maker and of an unskilled one such as janitor require varying degrees of experience, physical effort, mental effort, and responsibility, and are carried on under various occupational hazards and working conditions. The flexibility obtainable by being able to weight the different characteristics as they actually apply to the plant in question is one of the advantages of the point system.

Some companies simply accept point systems with fixed weight characteristics on face value alone and attempt to utilize them without adapting them to the peculiarities of their own plants. Such a practice frequently results in trouble unless the plan adopted and the necessary adaptation is supervised and checked by someone who has more than average

experience in weighting and job evaluation procedures. Two cases are cited here in an attempt to show what might happen if a company were to adopt a job evaluation plan from another company where the plan was specifically conditioned to serve certain purposes.

Company A. This company manufactured agricultural implements. Two of the largest divisions of the plant were its foundry and forge shop. The evaluation plan weighted "working conditions" so as to give that characteristic a maximum of 20 per cent of all available points. Most of the jobs in the company's large foundry had very unpleasant working conditions. The same company also had air-conditioned work-spaces where motor assemblies were built. In the plan used it was found that a weighting of 20 per cent adequately measured the relative importance of the best and the worst working conditions.

Company B. This company was engaged in the manufacture of precision instruments, and had no foundry or forge shop. All machine shops, assembly areas, and even the loading docks were air-conditioned and, generally speaking, even the worst working conditions equaled the best found in company A. Company B decided to adopt the same yardstick or job evaluation manual as was used by company A.

Where no wide differentials exist in job characteristics, any attempt to measure them can only distort the evaluation of the total job value. The evaluation committee in company B would undoubtedly make an attempt to "spend" the available points regardless of the fact that the step definitions clearly showed that expenditures of points were not warranted. Such an attempt to evaluate uniform conditions would be analogous to trying to differentiate working conditions of two typists located at adjacent desks in one large office.

Wholesale adoption of job evaluation plans without adaptation to prevailing conditions has been the underlying cause of many job evaluation failures, despite the fact that the technique of application might have been correct. Fortunately, more intelligence is now being exercised in the use of evaluation manuals of other companies. Labor has balked at the adoption of some of the association plans because

often they were foreign to the conditions actually present, and usually did not provide for employee participation.

Opponents of point systems have usually attacked the use of characteristics that were too intangible for numerical rating. They have claimed that arbitrary weighting places the total evaluation upon a "guesstimated" basis. This argument appears weak in the light of admissions from the same persons that they would consider these same intangible characteristics, but would not attempt to weight their relative importance. That would appear to be almost 100 per cent guesswork, for no point system could include and measure intangible characteristics of work.

By means of proper weighting, any group of these characteristics can be so attuned to the conditions prevalent at the time that an accurate, understandable, and workable measuring stick can be formulated from them. If the results of the trials, adaptations, refinements, and improvements continue in the manner now being recorded, it is possible that a somewhat standardized and proved pattern may result. With detailed instructions and warnings of what should and should not be attempted, it is likely that one standardized plan may be developed to serve a group of plants or an industry just as precisely and efficiently as a single plant.

Weighting in the Ranking Method

Because of the nature of this type of job evaluation the only weighting which occurs depends upon the varying concepts in the minds of the raters. In ranking jobs, the raters are usually asked to rank the jobs in the order of their importance to the company. Thus, any uniform set of concepts of what is important and what is not is rare if not actually impossible. The rater with a tool-room background would tend to enhance the accuracy and the experience requirements of a job, while the foundry man would unconsciously add plus values to the working con-

Western Electric

Attributes, Point Values, and Key to Grades Used in Determining the Value of a Job

The relative value of a job is considered to depend on the following attributes which are present in varying degrees in the various jobs. These attributes are not of equal importance, and to give recognition to these differences in importance, weights or points are assigned to each degree of each attribute in accordance with the following table. Any job under consideration will properly fall into some one of the several degrees of each attribute.

<i>Job Attribute Skill</i>	<i>1st Degree</i>	<i>2nd Degree</i>	<i>3rd Degree</i>	<i>4th Degree</i>	<i>5th Degree</i>
1. Education	14	28	42	56	70
2. Experience	22	44	66	88	110
3. Initiative and ingenuity	14	28	42	56	70
<i>Effort</i>					
4. Physical demand	10	20	30	40	50
5. Mental or visual demand	5	10	15	20	25
<i>Responsibility</i>					
6. Equipment or process	5	10	15	20	25
7. Material or product	5	10	15	20	25
8. Safety of others	5	10	15	20	25
9. Work of others	5	10	15	20	25
<i>Job Conditions</i>					
10. Working conditions	10	20	30	40	50
11. Unavoidable hazards	5	10	15	20	25

Establishment of Grade from Point Values

The total point score of the job determines the job grade in accordance with the following table:

<i>Score Range</i>	<i>Grade</i>	<i>Score Range</i>	<i>Grade</i>
up to 155	32	264-290	37
156-182	33	291-317	38
183-209	34	318-344	39
210-236	35	345-371	40
237-263	36	372-398	41

Colt's Patent Fire Arms

Points Assigned to Factors and Key to Grades

<i>Factors Skill</i>	<i>1st Degree</i>	<i>2nd Degree</i>	<i>3rd Degree</i>	<i>4th Degree</i>	<i>5th Degree</i>
1. Trade knowledge	14	28	42	56	70
2. Length of training	22	44	66	88	110
3. Complexity of work	14	28	42	56	70
<i>Effort</i>					
4. Physical effort	10	20	30	40	50
5. Mental-visual concentration	5	10	15	20	25
<i>Responsibility</i>					
6. Damage to equipment	5	10	15	20	25
7. Loss of product	5	10	15	20	25
8. Safety of others	5	10	15	20	25
9. Work of others	5	10	15	20	25
<i>Job Conditions</i>					
10. Working conditions	10	20	30	40	50
11. Unavoidable hazards	5	10	15	20	25

<i>Score Range</i>	<i>Men's Grades</i>	<i>Women's Grades</i>	<i>Score Range</i>	<i>Men's Grades</i>	<i>Women's Grades</i>
— 139		25	250-271	6	19
140-161	11	24	272-293	5	18
162-183	10	23	294-315	4	17
184-205	9	22	316-337	3	16
206-227	8	21	338-359	2	15
228-249	7	20	360-381	1	14

Figure 9. Sample pages from material

Company, Inc.

Experience

Experience is the measure of time on related work plus job training usually required by an individual to learn to perform satisfactorily the particular work being evaluated. Fundamental knowledge ordinarily obtained as a form of education or apprentice training should not be included in Experience.

The measure of time should include only the actual job training required on the work to be performed, plus any necessary experience on related work. Time on related work should include only such time as is required to learn to perform it satisfactorily and should exclude any time of employees actually spent beyond this.

Satisfactory performance involves the doing of work of satisfactory quality, in a quantity sufficient to justify continued employment on the job.

Knowledge required to read and interpret drawings shall be evaluated as Education.

1st Degree

Requires a short period of training on work to be performed or on related work, not exceeding a total of three months.

2nd Degree

Requires experience gained through job training or on related work in addition to job training, the total being over three months but not exceeding one year.

3rd Degree

Requires previous experience on related work in addition to job training, the total being over one year but not exceeding three years.

4th Degree

Requires a broad background of necessary practical knowledge obtained from previous experience and association with related work in addition to job training, the total being over three years but not exceeding five years.

5th Degree

Requires expert knowledge in a skilled occupation obtained from practical experience gained over a period exceeding five years.

Manufacturing Company

Length of Training

Experience is the length of time required by the average individual with the trade knowledge previously specified to learn to perform the work satisfactorily from the standpoint of quality and quantity under normal supervision.

1st Degree

Up to three months.

2nd Degree

Over three months up to one year.

3rd Degree

Over one year up to three years.

4th Degree

Over three years up to five years.

5th Degree

Over five years.

ditions. Under such conditions weighting is therefore said not to exist in commonly accepted plans of ranking evaluations.

Weighting in the Factor-Comparison Method

There are no limiting maximums for each of the five characteristics used in this type of evaluation. However, some fifteen to twenty key jobs which have been so clearly defined as not to be subject to dispute are found to have the same effect on final evaluations as other forms of fixed weighting. One of the steps in the factor-comparison method requires that each key-job wage rate be appropriately divided among the five factors in order to "quantify" the factor scales. If the job comparison scales indicate a maximum of 14 cents per hour for working conditions, 28 cents per hour for responsibilities, 22 cents per hour for physical effort, 33 cents per hour for skill, and 27 cents per hour for mental effort, it would seem that the factor-comparison method utilizes weighting in exactly the same manner as does any point system. Viewed from another angle the monetary values can be compared with weighting as shown below:

FACTOR	CENTS	PER CENT OF WEIGHT
Working conditions	14	11.3
Responsibilities	28	22.6
Physical effort	22	17.7
Skill	33	26.6
Mental effort	27	21.8
<hr/>		
Total		100.0

This weighting then remains constant until the time when more monetary value is given to any one of the five factors used in originally establishing the "quantifying" factor scales. If a new job is created later which forces the committee to evaluate physical effort at a new maximum of 28 cents, then

the weighting of all the factors would change simultaneously as follows:

FACTOR	CENTS	NEW PER CENT OF WEIGHT
Working conditions	14	10.8
Responsibilities	28	21.5
Physical effort	28	21.5
Skill	33	25.4
Mental effort	27	20.8
Total		100.0

Weighting in the Point Systems

Those persons partial to the point systems believe definite expression of the relative weight of each factor gives a control that permits a closer approximation of the total values of jobs. It is believed that within certain limits, variations as to the percentage of weighting make little or no difference in the ultimate results.

Figures 9 and 10 show typical weightings of some successful point systems and illustrate how some companies have weighted the different characteristics. Definite trends or ranges can be noticed, which should be useful to companies desiring comparative data. In summarizing this table of typical weightings, definite ranges were found. Since it is not intended that these ranges constitute the limits of any proposed plan, it would be expedient to consider the reasoning which led to selected weightings coming outside of the ranges shown in the table.

No Absolute Check on Proper Weighting

Many studies of the reasoning involved in weighting characteristics for job evaluation purposes have failed to provide a formula which might be considered foolproof. Wage incentive plans have their weaknesses also, yet that does not

prevent the incentive method from being used. The incentive experts realized for many years that by means of extremely accurate stop-watch readings, plus the necessary allowances, they could establish what constituted a fair hour's production. The weakness in this method is that an arbitrary value in the form of a wage rate on which to base the

CHARACTERISTIC	PERCENTAGE RANGE OF WEIGHTINGS	
	MINIMUM	MAXIMUM
Schooling or equivalent	7.5	18.0
Experience and training	12.0	22.0
Manual skill	12.5	13.0
Mental skill	17.0	20.0
Responsibility for safety of others	3.0	8.0
Responsibility for spoilage	5.0	15.0
Responsibility for damage to equipment	3.0	10.0
Accuracy	5.0	8.0
Physical effort	4.0	15.0
Mental effort	6.0	12.5
Hazards	4.0	7.0
Surroundings	3.0	20.0
Connected expense	1.0	2.0
Supervision	3.5	5.0
Fatigue	5.0	8.0

incentive rate must be chosen. Job evaluation has to a great extent eliminated the arbitrary selection of the base rate in incentive applications. The important thing to be remembered is that even with arbitrary weighting of characteristics, this type of job evaluation will give reasonably accurate results. Sponsors of the various wage incentive systems did not argue the merits and demerits of the approximations that were used, but confined that activity to discussing the percentage of the management-employee split which resulted from reduced costs of production. Because of the lack of standardized rules for weighting no one should

Characteristic	Sperry Gyroscope	Carnegie-Illinoian Steel	General Electric	U. S. Gauge	Piper Aircraft	Schrader Valve	New York Air Brake	Ralston Steel Car	N.M.T.A.*
Schooling or equivalent	7.5	10.0	12.5						
Experience-training	12.5	12.0		20.0	22.0	18.6	18.0	10.0	14.0
Manual Skill	12.5		13.0				20.0	12.0	22.0
Mental skill	17.5		17.0						
Safety of others	3.0	5.0		5.0		3.5	8.0		5.0
Spoilage	8.5	9.0		12.5	7.0	13.8	6.0		
Damage to equipment	4.5	5.0			3.0	11.2	3.5		5.0
Accuracy	5.0	8.0					8.0		5.0
Physical effort	7.0	6.0		6.25	8.0	4.0	6.5	15.0	6.0
Mental effort	10.0	10.0		6.25	12.5		8.6	6.0	10.0
Hazards	6.0	5.0			7.0		3.8	7.0	
Surroundings	4.5	4.0		12.5	6.0		3.2		
Connected expense	1.5	1.0			1.5		3.5		
Supervision	5.0								
Skill-dexterity	15.0								
Fatigue	5.0								
Skill				50.0			6.0		
Mechanical ability					16.5				
Complexity					11.0				
Dexterity					5.5				
Mental capacity									
Judgment-initiative									
Physical skill									
Practical knowledge									
Concentration									
Eyestrain									
Initiative-ingenuity									
Skill, accuracy, dexterity									
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* National Metal Trades Association.

Figure 10. Percentage weightings of some representative job evaluation plans.

be prejudiced if arbitrary weighting is exercised in this phase of the work. Specific percentages of weightings for different characteristics and combinations cannot be established any more than countrywide rates for toolmakers, turret lathe operators, and other occupations can be established. Different systems of merit rating have enjoyed some degree of popularity as an aid in supplementing wage determinations, but no particular interest has been occasioned by the weighting of the personal characteristics which are used to rate employees. Job evaluation is not an exact science and should not be treated as such. Students of job evaluation should realize that evaluation is but an approximation to a scientific procedure.

Employees' Concepts of Weighting

Prospective employees offering their services for sale generally have a keen sense of an employer's total evaluation of a job. Primarily they offer the experience, training, skill, and physical capacity to do certain jobs. A man looking for a job is not particularly interested in the working conditions, the monotony of the work, or its other limitations. The job seeker assumes that since he is but a single part of the labor supply, that he can take whatever goes along with a job the same as others who have been hired to do the same work. Usually the job applicant stresses his particular ability and qualifications which are covered by the primary characteristics of work. A foundry shake-out man tries to convince the interviewer that he is capable of doing heavy work, and is used to working under conditions involving heat, dust, dirt, fumes, and hazards. Such an applicant usually has little more to offer. Engravers, who have highly developed skills, would tend to subordinate their physical skills and emphasize the high point their artistic skills have reached. All of these natural concepts of job worth must in the final analysis almost coincide with committee weightings. If a plant has some operations which

Characteristic: Working Conditions.		A. Hazards of the Job			
Code	Probability of Injury	Cuts, Bruises, or Burns No Time Lost	Injury Resulting in Layoff up to One Week	Injury Resulting in Layoff of 1-24 Weeks	Injury Resulting in Layoff of More Than Six Months
M	N	O	P	Q	R
A	Injury is very unlikely and regarded as unusual. Attendants, watchmen, etc.	5	10	15	20
B	Occasional injury or accident may occur. Usually all hazards safeguarded.	10	15	20	30
C	Possible hazard exists because of conditions that cannot be 100 per cent guarded	15	20	30	45
D	Nature of work is a recognized hazard requiring alertness at all times.	20	30	45	60

Figure 11. Visual aids in a 1938 manual.

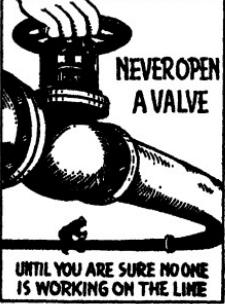
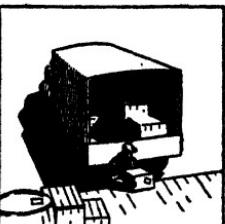
Characteristic: Responsibility for Safety of Others			
Points			
Low	High		
0	5	A	<p>Minor cuts, bruises, burns, or abrasions.</p> <p>Typical examples: bumping into employees with tote boxes, parts, or material; careless handling of soldering iron.</p> 
6	12	B	<p>Severe cuts or abrasions (some loss of time).</p> <p>Typical examples: running into employees with hand lift truck or barrel truck; handling bar stock or boxes; blowing chips or dirt into other employees' eyes when using air hose; dropping tools from scaffold.</p> 
13	20	C	<p>Fractures, severe burns, eye injuries.</p> <p>Typical examples: dropping heavy units on an employee's hands or feet; careless handling of welding or cutting torch; improperly chucking or fastening parts; or operating machines causing parts to fly or tools to break and strike other employees.</p> 
21	30	D	<p>Loss of extremities (hands, fingers, etc.), sight or permanent disability.</p> <p>Typical examples: moving heavy machinery or equipment.</p> 

Figure 12. Visual aids in a 1958 manual.

consist of heavy work, the weightings of the characteristics must be proportionate, and by the same token there must be enough gradations on the scale to differentiate between the higher and the lower degrees of physical effort. The same reasoning applies to all of the other characteristics. Judicious use of common sense on the part of any job evaluation committee will usually offset any but irreconcilable gross errors in weighting.

Weighting as a Reflection of Committee Judgment

Permitting characteristics to be weighted outside of practical limits usually indicates that an individual or group of individuals dominates the committee. A committee composed of tool makers would place heavy values on experience, skill, and accuracy. Another committee composed of a majority of yard workers might discount experience and skill in favor of manual skills and working conditions. When an evaluation committee has trouble in the weighting of characteristics it will often be found to be composed of employees who are not truly representative of the plant concerned.

Psychological Weighting of Characteristics

Psychological weighting of characteristics is occasionally resorted to in an attempt to emphasize or direct attention to a specific general requirement or condition of the plant as a whole. Usually this practice is limited to but a few characteristics such as accuracy, ingenuity, results of errors, responsibility for spoilage, or related factors. Such weighting is almost always the result of a unilateral program where management desires to insert weight in those places which would benefit the company financially. The loading of the weighting of a specific characteristic is intended to publicize that characteristic of work throughout the entire plant. This practice is believed to be justified where the condi-

tions of a plant or an industry demand that extra precautions be taken to improve inherent weaknesses. A manufacturer of precision instruments must instill the importance of accurate workmanship into the minds of all employees. If the employees are conscious of the fact that accuracy is one of the factors by which their wages are computed and they realize that it is an important factor, there is a natural tendency to become "accurate-minded." Frequently heavy weightings have been given to the characteristic of ingenuity for the purpose of stimulating the use of suggestion systems, for there are very few plants where ingenuity would be considered as part of the common denominator, and applicable to all jobs. From a practical standpoint, ingenious operators and standard practice sheets have caused operational troubles for years.

Some companies have been practicing psychological weighting unconsciously for years. Almost everyone has heard of or had some experience with those companies whose policy has been to hire only "green personnel." These companies frankly admit that the prospective employee need not have much skill, for it is the intention of the company to teach what is needed. Such practices, of course, constitute psychological weighting in reverse.

5. JOB EVALUATION MANUALS

Stability of Job Evaluation Manuals

To *evaluate* means to estimate, to place a value upon, to find the amount of, or, in a mathematical sense, to find the numerical value. The word *manual* in the job evaluation sense means a small handbook of directions. The combination of the two words, therefore, denotes a small but complete handbook containing the directions by means of which certain estimates or values may be determined.

The job evaluation manual is the mechanical heart of any evaluation program. Once edited, checked, approved, and tested, it remains constant throughout the entire program and is the basis for smooth continuity of wage administration in later years. Job content may change, basic lines of the wage structure may be adjusted from time to time, but the manual and terminology must remain the same. (See Figure 13.)

Format of the Job Evaluation Manual

Job evaluation manuals vary from a few typewritten sheets to elaborate publications bound in leather. Some of these manuals merely record the scales which were used to measure the different characteristics of work with enough written material to make clear the use of the manual. Other manuals go much further and in some instances have attempted to explain the theory, the mechanics, and the methods of monetary conversion of points to wages. It is believed that there is a workable area somewhere between the two extremes. If it is intended that the job evaluation program is to be of a lasting nature then the manual should be complete enough so that any new committee evaluator can grasp the funda-

1. *Inadequate lighting.* An established system of direct or indirect lighting, artificial or natural, the inadequacy of which is measured by (1) type of work being done; (2) degree of accuracy; (3) fineness of detail to be observed.
2. *Glare.* Any brightness within the field of vision of such character as to cause discomfort, interference with vision, annoyance, or eye strain.
3. *Inside.* Indoor protection from weather conditions.
4. *Outside.* Out of doors, or under an overhead covering with slight protection from the weather.
5. *Hot.* Differential temperature which is above the normal room temperature, regardless of seasonal fluctuations.
6. *Cold.* Temperature falling below 40° for active manual work.
7. *Inadequate ventilation.* Inadequate ventilation may be characterized by the absence of sufficient clean air supplied by natural or mechanical means to offset conditions of heat, dust, or fumes associated with the workplace.
8. *Dust.* Solid particles generated by mechanical effort which settle under the influence of gravity.
9. *Dirty.* Contact with, or exposure to, dirt, oil, grease, or soiled materials.
10. *Fumes.* Solid particles generated by condensation from the gaseous to the liquid state. May be either toxic or non-toxic.
11. *Noise.* Sound within the environment of the job measured by (1) intensity; (2) nature of the operation; (and 3) whether that noise is continuous or interrupted.
12. *Mechanical hazards.* Exposure to mechanical parts involving the risk of cuts, bruises, sprains, fractures, impairment of sight, or sudden death.
13. *High places.* Workplace is at an elevation above the ground when the occurrence of a fall may result in serious injury or sudden death.
14. *Exposure to burns.* Workplace involving the risk of being burned from hot materials, fire, or chemical agents.
15. *Vapors.* Exposure to gaseous substances energized through the application of additional pressure or decreasing the temperature.
16. *Electrical hazards.* Workplace involving the risk of being burned or shocked from electric or electronic circuits in high-tension wires, transformers, bus-bars, or other uninsulated or unshielded electrical equipment which may result in serious injury or sudden death.
17. *Working with others.* Job requires the presence or absence of occupational co-operation with fellow workers, or direct contact with the public.
18. *Water or coolants.* Job requires contact with water or coolant during performance of the work elements.

Figure 13. Definitions of working conditions.

mental thinking that was used in the development of the program. The manual should also be so constructed physically that it will not wear out or disintegrate.

Once the committee is sure that it has a manual that is workable, it becomes the responsibility of the committee to see that copies are published and circulated to the proper personnel. If the evaluation program is large enough to warrant it, the manual should be printed. The well-constructed job evaluation manual will generally contain most of the following sections:

- I. Table of contents.
- II. Introduction.
- III. Authorization.
- IV. Purpose of the job evaluation.
- V. Scope of the program.
- VI. Summary of characteristics.
- VII. Explanation of basic points (if used).
- VIII. Weighting of the characteristics.
- IX. Definitions of characteristics.
- X. Evaluation scales for each characteristic.

Lack of space prevents the reproduction of more than one of the good job evaluation manuals that have successfully measured job requirements. The ideal manual is yet to be developed, and, as the current manuals are keeping pace with changes in job evaluation technique, there is no doubt that industry will soon be provided with better job yardsticks. One of the prime moving forces will be technological advances in production. New operations will cease to be the exception, and will perhaps become a daily occurrence. The manuals designed for today should, therefore, not be so constructed as to prove limiting in the future. There are also those manuals which have been called "rubber manuals" or "elastic yardsticks," which may have proved useful for a single usage, but have had to be discarded when subjected to the tests of time.

Visual Aids in Job Evaluation Manuals

As job evaluation became more acceptable it became increasingly apparent that better manuals had to be developed. First, there were the simple guides for evaluation, which gradually gave way to more pretentious handbooks in which the characteristics were separately treated. Step definitions came into being in an attempt to set up levels or degrees of requirements of the characteristic in question. For example where a 1st Degree stated, "Light work requiring little effort," there gradually came into use a supplementary page to clarify and standardize the reasoning of the evaluators:

PHYSICAL EFFORT

1st Degree CRANEMEN A, B
 INSPECTORS (FEMALE) A, B

2nd Degree ASSEMBLER, BENCH
 LATHE OPERATORS, ENGINE A, B, C
 TOOL MAKERS A, B, C
 TOOL CRIB ATTENDANT

It was evident that no supplementary listing could be devised that would prove satisfactory prior to the time of the evaluation. Some better approach had to be created. The advantages of visual training have been known for many years, and some few of the better job evaluation manuals have utilized these advantages by incorporating pictorial representation into step definitions. Evaluators who use the illustrated job evaluation manual have repeatedly demonstrated that by this means the time of evaluation has been materially shortened. The illustrations seem to assist the evaluators in retaining the relative importance of the degrees of the various characteristics.

This type of improvement in manuals did not develop suddenly, nor have the results been uniform in all cases. Some manuals have been studied where visual aides were partially used. Figure 11 shows an early attempt at the use of visual aids concerning working conditions that con-

sisted merely of cartoons and line drawings, which evidently were typical of the safety journals of that day. They did serve the purpose, however, and the success of this type of approach was assured from the beginning. Figure 12 shows another page from the same manual which treats "Responsibility for safety of others."

Further refinements came when drawings gave way to photographs. At the start it was not believed that the added expense of taking photographs would pay, but as the skill of the evaluation-manual makers progressed it was discovered that expenditures of this type did pay dividends by saving expensive committee time. The resultant evaluations seemed also to be of superior quality. If photographs are used, they should be taken in the plant with which employees are familiar. Care should be exercised in taking the pictures so that faces of operators do not show. Job evaluation concerns the job alone, and all personality factors should be eliminated. There may be some operations which will require a full picture of the operation, an industrial tractor at work, for instance, but the same results may be obtained by taking the picture from an angle where the employee's features are not recognizable. While taking such pictures a full explanation should be given the employees, together with a brief description of the purpose the pictures are to serve. Considerable embarrassment can be avoided if the employees are shown the prints prior to their use in the manual. If the employee has any objections to the photograph he will usually say so at that time.

The full use of visual aids in job evaluation manuals is shown in the sample job evaluation manual reproduced as Appendix C, beginning on page 242.

Step Definitions in Job Evaluation Manuals

Any measuring device such as a micrometer, yardstick, ruler, or pattern has a utility which is directly proportional to the skill of the person using it. If a job evaluation

manual lists certain characteristics and sub-characteristics that cannot be interpreted uniformly and consistently, there is no reason to suppose that a measuring device has been developed. The secret of being able to construct a good manual lies in the ability to write good step definitions of requirements for each level of the characteristic. The language used in these definitions must be of such a nature that it will apply to all departments of the plant. It is very difficult to phrase sentences accordingly, but the experienced evaluator knows this, and also that it is next to impossible to select for each step definition descriptive phrases which are common to every operation. After a little experience the evaluator is able to read between the lines and determine uniform values. For example, the following step definition for mental skill illustrates fairly well the art of defining requirements without specifically naming them:

CHARACTERISTIC: MENTAL SKILL

6th Degree Job requires planning and devising of procedures to follow.
May require complete layout of work ahead of performance.
Minimum amount of supervision.

In evaluating the job of millwright A there would seemingly be no other step definition that would cover the millwright A better than the 6th Degree. Accordingly the range of expendable points would be those points allotted to the 6th Degree. The evaluator's task would then be to determine at what level in the range the job should be evaluated, keeping in mind the relationships of other jobs that had previously been evaluated in the same range of the same characteristic. There are many other jobs that would be slotted into the same step definition such as tool and die maker A, electrician A, machine repairman A, glass blower A, experimental mechanic A, and so forth. These jobs are in the tool room and maintenance and experimental departments, yet the step definition in no way uses phrases which are peculiar to any one of those departments.

Step definitions should be checked before final approval

to ensure the elimination of superfluous adjectives. The free use of adjectives cannot possibly improve the definitions and usually detracts from uniform interpretation. If the committee decided that there were to be but three levels or gradations in the characteristic "working conditions," namely, clean, dirty, and very dirty, eventually the question will arise as to what constitutes the difference between "dirty" and "very dirty."

Extreme care must be exercised in selecting the jobs that are to be used as bench marks. Many an otherwise excellent manual has been rendered unusable because certain jobs were chosen to represent a particular degree of the characteristic. An error of this sort occurs when editors fail to consider all of the jobs to be evaluated.

Certain words and phrases should be avoided inasmuch as they might tend to impinge on the field of good employee relations. If a step definition were to contain the statement, "No responsibility for the safety of others," it would seem that any safety program would be for naught. It would be better to express the same degree by giving the job the benefit of the doubt and saying "Little responsibility for safety of others." Controversial words such as "simple," "none," "easy," "dangerous," or "unhealthy" should be omitted from definitions.

Authorization and Company Policy

Job evaluation programs result from various motives. Some follow from mutual agreement between the company and the employees' duly elected bargaining representatives; some from unilateral action of the company; others may be started by directives from government agencies; or an arbitrator may have suggested the work as a solution to wage disputes. Regardless of the reason, the authority for the program should be made clear to those concerned. An arbitrator's award directed toward job evaluation might read as follows:

A committee consisting of representatives of the Company and of the Union shall be organized for the purpose of preparing a job classification system for the employees of the Company, and shall classify employees according to the system worked out. In the event of any disagreement, the classification upon which the Company and the Union are unable to agree shall be submitted to the arbitrator for decision.

In those instances in which the company and the union agree to and complete a job evaluation program it is considered wise to issue a joint statement signed by responsible persons of each group. Such a statement might be phrased as follows:

AUTHORIZATION OF JOINT JOB EVALUATION PROGRAM

In order to determine the fairest rate of pay for all jobs under the jurisdiction of the bargaining unit, the Company and the Union agreed to co-operate in a Joint Job Evaluation Program, that is, in a study and evaluation of each of the hourly paid occupations. As a result of these studies, it became possible to determine what any particular job was fairly worth in relation to all the other jobs.

The Joint Job Evaluation Committee consisted of five persons appointed by the Union, and five persons appointed by the Company. This Committee had no authority to make recommendations as to any individual's rate of pay, or as to the quality and quantity of any individual's work. It confined its activities strictly to the evaluation and study of the job itself, and not the person or persons performing the particular job. The Committee's work was based on facts, and these facts had to come from employees and supervisors alike.

It is intended that Job Evaluation will provide an equitable wage structure that will work for the mutual interest of all concerned.

Scope of the Evaluation

The scope of the program should be defined prior to starting any of the details of the work. Neither employees nor management like to have the rules changed in the middle of the program. Where an evaluation program is a joint union-management undertaking there are specific clauses contained in the contract which exclude certain occupations, which simplifies the determination of the scope of the pro-

gram. However, in many plants there are such occupations as factory messengers, leaders, timekeepers, and departmental clerks, who are paid on an hourly basis. There are just as many companies who treat this type of occupation on a salary basis. The committee should allow enough time to clarify the issue at the start. Considerable employee dissatisfaction can be generated if certain groups are allowed to think that they are to be included in the evaluation program only to be told later that the scope of the work did not cover them.

Printed Manual vs. Sheet Manual

The majority of the better representative job evaluation manuals are usually found in printed form. This should not be construed to mean that manuals in other forms are not good, as frequently the prime reason for not printing is cost. Printed manuals seem to be of better quality because:

1. Considerable time has been spent checking the manual before it goes to the printer to ensure freedom from error.
 2. A printed manual seems to convey the thought that it has proved workable, and is beyond the stage of experimentation.
 3. A printed manual speaks for itself and dissipates the idea that perhaps a secret yardstick wielded by a select few was used.
 4. A printed manual allows no room for additions or omissions.
 5. A printed manual usually has a wider circulation than the plant which it serves. No company will distribute a poorly conceived plan.
- There is no excuse for a poorly constructed job evaluation manual regardless of whether it is printed from type or reproduced from typewritten pages by means of ditto, mimeograph, photo offset, or some other process.

Use of Base Points

There are several theories concerning the use of base points in evaluation programs. A majority of point plans use base points, usually 400 points. This preference for 400 points can be traced directly to one of the original plans developed at the General Electric Company. Many company plans incorporated this feature for the express purpose of being in a position to compare the results of their evaluations with similar evaluation plans already in existence. If any other plan had been used, comparison would have necessitated time-consuming conversion processes.

Regardless of the number of base points selected, the resultant evaluations remain relatively constant. However, there are some advantages in the use of base points that should not be overlooked. It is well known that honesty, ordinary care, willingness to work, aptitude, desire to create, and a few other characteristics are common to all occupations. To the uninitiated employee the omission of some of these factors is not understandable. An employee working in the tool crib might say: "I have every opportunity to steal tools which I can readily sell. I have to be honest! That is part of my job. Why isn't my job rated on that basis?" The use of base points has been found helpful in allaying the demands of aggrieved employees who found themselves working under conditions which emphasized the characteristic but which, when analyzed, were found to be common to all jobs. No job-measuring device should be constructed which will tend to measure the degree of honesty required in all jobs. It must be assumed that one of the requirements of every job is honesty.

There is another valid reason for the use of base points, which is derived from a knowledge of human nature. Upon completion of the evaluation processes the lowest-rated job might have received an evaluation of 40 points. The employee involved must certainly feel better inclined to accept

the rating of the committee regarding his job if it was listed as 440 points, rather than just a "40 point job." This distinction may seem small, but practical experience indicates that employee's feelings must be considered.

Some job evaluation manuals have attempted to utilize base points in an attempt to tie in apprenticeship, learner, or trainee evaluations, where it has been the practice to pay lower wages during the learning period. Such a procedure is not generally justified, chiefly because it is not defensible from all angles. There is a difference in paying lower wages when regular apprentice papers have been signed by which the company is committed to teach a trade, as compared with paying lower wages than the lowest classified job. Job evaluation is only relative, and while it is possible to determine the relative value of the least skilled job, an attempt to determine graduations of that value would be of doubtful value.

Need for Simplicity

The completed manual will not be accepted by the employees with much interest if it contains mystifying charts, graphs, formulas, and blueprints. The simple approach always pays big dividends. The manual should be so formulated that the newest employee can, within a reasonable length of time, actually evaluate the worth of the job he is working on. While he may not be able to evaluate all jobs, there are some that he can appraise which will fit into the area of comparative jobs, by which he will measure his own. If the manual attempts to go beyond the actual measurement of jobs and sets up procedures and instructions for administration the employee usually becomes confused. Such a manual also would tend to become obsolete since basic wage structures with given specific terminal points and wage rates are not static for long.

A good manual will prove to be a pillar of strength to those who are later charged with the responsibility of deter-

mining new job values. Old jobs will change, but the availability of a sound and tested method of measurement soon removes the fears and suspicions of those employees who have had experience in working at evaluated classifications. A job evaluation manual cannot be assembled on the spur of the moment in the hope that the superior knowledge and the pooled judgment of the committee will offset any errors it may contain. Memory is too short, and the need for measuring may arise tomorrow. The manual must be clear and give the same answers tomorrow as would be determined by its use today.

6. JOB EVALUATION QUESTIONNAIRES

CIRCUMSTANCES involving time, expense, and other related factors determine to what length the committee will have to go to get the necessary facts for job descriptions. In discussing the job evaluation questionnaire it is assumed that good, clear, and concise job descriptions are desired, and that the true significance and importance of factual data is acknowledged. The committee then faces the problem of how to collect reliable material in the quickest and most practical manner. Again it should be stated that the procedures, practices, and forms which have been proved under different circumstances are not guaranteed to work in other cases. The sources of information which can be utilized successfully in accumulating data prior to the actual writing of job descriptions are definitely limited.

Sources of Information

It is not difficult for the committee to determine what the reliable sources of information are. If the evaluation is directed by the management then the management usually depends on company representatives supplying the information since this type of evaluation implies that none of the employees are going to participate in it. A joint evaluation program immediately opens up the possibility of additional sources of information. If the evaluation is being done by outside consultants, even more sources of information become available. Previous evaluation programs can be used objectively in collecting information which might advantageously serve the committee.

What are these sources of information? They are certainly not matters of opinion for if all job descriptions were based on opinions alone, the resultant evaluations would

have no consistency. Actual evaluations are the result of the pooled judgment of a group of competent persons, and, therefore, in all cases that judgment must be based on factual data, and never on opinion alone.

Some of the sources of information which are available for obtaining factual data for job descriptions are:

1. INFORMATION FROM EXISTING JOB DESCRIPTIONS

This source of information is rarely found in a form that is readily usable, and if this source does exist it should be checked carefully to eliminate any obsolescent features. Few industrial jobs are static in job content. To the inexperienced person the utilization of old job-descriptions might not seem objectionable until he discovers, for example, that new tools have been added in one job, and that sharpening of tools is an additional requirement of the job in another. Often old job-descriptions were written with specific motives in mind, and an experienced person can usually ascertain by inspection the status of employee-employer relations at the time of writing. Such job descriptions often show the purpose for which they were written. For example, should job descriptions of classification A consistently contain qualifications very difficult of attainment, whereas job descriptions of classification B are easy for an employee to measure up to, it may be assumed that the system was designed directly for the purpose of influencing lowered wage costs. Other patterns can be noted with little study, such as job descriptions which are written purposely to make certain categories of jobs sound attractive. Unfortunately, this latter type of job description is rather common as it was freely used during the World War II years in an attempt to circumvent the strict stabilization policies of the National War Labor Board. The most common type of existing job descriptions are those which remain as a hang-over from the war days when all employers were required to have on record some descriptions of current jobs. The government

demanded no uniformity in these descriptions and many companies only went through the motions and thus established a variety of "token" job descriptions. All such descriptions should be avoided as entirely useless for job evaluation purposes.

To show the two extremes to which certain companies went in providing job descriptions in compliance with the government executive order the following two examples are quoted:

CORE MAKER

Small or medium cores, involving skill in venting, ramming, reinforcing.

BENCH LATHE OPERATOR A

Sets up and operates either a precision-type or screw-cutting type of bench lathe with general supervision, working from intricate blueprints and operation sheets. Has working knowledge of machine feeds, speeds, and coolants. Uses hand feed in the machining of ferrous and non-ferrous metals, alloys, plastics, precious metals, and castings, using standard bench lathe attachments as turrets, collets, face plates, fixtures, etc., and nests, studs, mechanical aids, and arbor of own design suitable for the job. Operations involve turning, taper turning, boring, facing, facing drill, reaming. Must use care and skill in the machining of delicate parts. Must be able to grind drills and turning tools to get required finish, and change all other cutting tools as needed. Must have a working knowledge of shop mathematics. Must maintain precision tolerances of 0.003, using such instruments as micrometers, verniers, indicator gauges, calipers, etc.

There are no set rules of the extent and detail that should be expended in developing model job descriptions. From the examples cited it is evident that little effort was expended on the "core maker" description as compared with the over-detailed description of "bench lathe operator A."

2. INFORMATION FROM EMPLOYEES

The natural source of information about a job is the employee himself. Certainly the employee on the job should know the job content. This source must not be overlooked.

regardless of how tempting other sources of information may appear. The individual on the job knows what is demanded, what the job requires him to give, and the conditions under which he works. The real problem before the committee is to find means of extracting this information without disrupting production. Data secured from employees on duplicate jobs is used to develop a composite job description. Generally speaking, an employee is not capable of writing a good description of his own job.

Normally, there are two methods of obtaining this information from employees. One method involves individual interviews, and the other method seeks to gain the same information by asking the employee to participate in the program through the use of employee questionnaires (as Figure 14, for example). The personal interview is the most thorough and detailed approach, for personal contact with employees gives an advantage that is of wonderful benefit to the program. The personal touch is entirely lacking when the questionnaire method is used. The personal approach is, however, costly, time-consuming, and impractical in plants having large numbers of employees. In the past it has been argued that the use of questionnaires in the study of hourly-rated jobs was impractical, as certain limitations of education usually resulted in worthless answers. That may have been the condition in the 1910-1930 era, but employees of today are usually high school graduates at least, and are well able to provide satisfactory answers to a well-designed questionnaire.

3. INFORMATION FROM SUPERVISORS OR FOREMEN

This source of information is always present; in fact, combined information from the employer and the employee is superior to all other information. Some supervisors may tend to overemphasize certain parts of the job. Occasionally the human equation may overbalance judgment to a slight degree. A foreman in the foundry who had at some time

Job Evaluation Data Sheet

Job Title _____ Dept. _____ Date _____

Product _____

Equipment _____

Description of Job _____

Strength: Maximum weight lifted _____

Endurance: Work at same pace entire shift _____

Must keep up with a machine or group of workers? _____

Work very hard? _____ % of time _____ Standing _____ Sitting _____

Lift work above head? _____ Or from floor? _____

Anything else that causes excess fatigue _____

Accident Hazard: _____

Comfort: Uncomfortable because of _____ heat _____ cold _____

Change of temperature _____ dirt _____ wet _____

Supervision Received: From whom do you receive instructions about this job? _____

Can you get additional information at any time? _____

Supervision Given: Do you have any helpers? _____ How many do you teach? _____

Responsibility for the Safety of Others: What do you have to watch to keep from injuring others? _____

Who would be injured if you were careless? _____

Responsibility for Equipment: What machines do you operate? _____

What damage is likely to occur? _____

How much time and material will it take to repair it? _____

Responsibility for Material: For what materials are you responsible? _____

Cost of any damage _____

Knowledge of Equipment: With what equipment do you work? _____

[Continued on following page.]

Figure 14. Job evaluation questionnaire to be filled in by employees.

What equipment do you operate? _____

What equipment do you have to be able to find the trouble and make the required repairs or adjustments? _____

Knowledge of Methods: Can this job be learned quickly? _____

What part of the job is most difficult? _____

Knowledge of Materials: What materials do you have to be able to recognize? _____

How many materials do you work with? _____

Schooling: What reports do you make out? _____

What calculations do you make? _____

Judgment: What decisions do you make on the job? _____

Initiative: _____

Ingenuity: _____

Versatility: How many different skills does this job require? _____

Dexterity: What part of the job requires the most skill? _____

Precision or Accuracy: What care is required to avoid poor-quality work? _____

What care required to avoid loss? _____

Remarks: _____

Information by _____

Figure 14 (Continued). Job evaluation questionnaire to be filled in by employees.

received a bad iron burn might stress the hazards of all molding jobs; a foreman in a large screw-machine department might unconsciously slight working conditions and overemphasize the importance of a top-notch setup man.

A foreman should not be expected to write job descriptions, nor is he usually well qualified to do this job. One of the chief objections to securing information about jobs from foremen involves their attitudes toward the personnel in their departments. Job descriptions of work which have single incumbents often reflect the foreman's personal opinion of the operator. Jobs operated by favored employees are often inflated by the foreman. Usually the supervisor acts unconsciously, and is unaware of showing any partiality. An added objection to assigning foremen to write job descriptions is that often they do not have the time to do the added work.

The three most common sources of information have been touched on, but another problem remains: shall the interview system be used to gather the data, or will employee questionnaires serve the purpose equally well?

Interview vs. Questionnaire

In a shop or factory employing relatively few workers, it is practical to use both the interviewing and the questionnaire techniques. For those companies that employ thousands, actual interviewing of employees is not recommended. The primary objective in any case is, of course, to obtain factual data that is suitable for analysis by those who write the job descriptions. A secondary objective is the psychological advantage of employee participation in the program. No one can argue against the superiority of the results obtained by calling an experienced job analyst * to talk with each employee at his or her workplace. With few exceptions

* A job analyst is a person who is able to separate a job into all its characteristics and examine these parts to determine essential features.

most employees like to talk about their work. The skilled analyst is able to separate the true job content from the incidental work that an employee may sometimes be asked to do, but which is not a regular part of his work. No analyst should ever use negative approaches to a discussion of work content. The analyst should in all cases carefully explain the purpose of the visit prior to the actual discussion of the job. A shrewd analyst approaches the employee in a quiet manner, introduces himself (if he does not already know him), and states the purpose of his visit. It may be that the worker is well known to the analyst, and the work being studied equally well known. In such a case he should study the job from a "checkup" point of view, stating that he has seen the job many times, but that now he must closely study the job content. It is important that the same general approach be made to all employees, since they frequently check with each other to determine what questions were asked, and what answers were given. An employee's estimate of the interview will be increased if the necessary papers, including his name, clock number, job classification, and so forth, are prepared prior to the time of the interview. To the employee, this means that he has a definite place on the employee roles, that he is already on record as doing a certain kind of work, and that he is doing it. This procedure saves much time, and, frequently, some embarrassment on the part of the employee, particularly if his name is difficult to spell. The experienced analyst will know when he has obtained all the necessary information. He will be skilled in extracting the necessary data without having to engage in a direct questioning bout. The analyst soon develops a shorthand of his own from which he is later able to write a good job description. Having gained his objective, the analyst will review the facts furnished by the employee, ask him if there are any omissions or corrections, thank him, and move on to the next person.

The procedures discussed here are designed to cover the minimum of effort to be expended on any one employee.

In actual practice employees are sometimes interviewed where conditions are more conducive to conversation. Time and cost are the greatest disadvantages of the interview system. If a compromise program wherein some representative employees are interviewed and some are sent questionnaires is adopted, there is always the risk of incurring the ill will of those employees who are treated impersonally. Which of the employees are to be considered "representative"? No method of sorting out the so-called "average employees" can be determined which may not arouse unnecessary antagonism.

It is estimated that the over-all average time of interviews approximates one-half hour per employee. Some of the jobs to be studied permit short interviews, but there are also the more complicated operations and processes which require considerably more time. For example, some molding operations require a long sequence of operations which terminate with the actual pouring of the metal. Certain machine operations, such as cuts on long shafting, take time, and unless the analyst is prepared to see all of the phases of the job he may put himself in the position of not seeing the job through. If a closer estimate of interview costs is desired the following formula may be used:

$$\text{Number of employees} \times \frac{\text{Average hourly rate} + \text{analyst's hourly rate}}{2}$$

If 1000 employees, whose average hourly rate is \$1.00, are interviewed by a \$50 per week analyst, the average interviewing cost is

$$1000 \times \frac{\$1.00 + \$1.25}{2} = \frac{\$1125.00}{1000} = \$1.125$$

This estimate does not represent the cost of the job description, as it pertains to the cost of the interview alone. The average cost of the study and the further analysis preparatory to writing the job description is estimated to total \$3.00 per job described.

In summarizing the question of whether to use employee interviews three situations must be considered. If cost is not important, then the time element and geographical locations of multiple plants are factors of more importance. If trained personnel are not available to speed up the interviewing, then the questionnaire method should be used. If the plants are widely separated, then it is likely that the committee will adopt the questionnaire method. Many plants reflect the personal characteristics of the plant manager and as yet there has been no method developed which will compensate for the variations which result when local managers resort to the personnel of their own plants for the process of collecting job data. This factor alone would seem to favor the questionnaire method as a means of obtaining uniform results.

Psychology of the Questionnaire

Those persons who have had experience with the average questionnaire circulated among plant employees are usually aware of the type of returns to be expected. A job evaluation questionnaire is different from the average questionnaire inasmuch as most employees realize that it is directly or indirectly related to the question of their wages. No committee using the questionnaire approach can expect to receive all of the answers by this means. By the same token no committee can expect employee approval of the final job descriptions unless employee participation of some kind has been incorporated into the plan. Employees always want the opportunity of telling in their own way what constitutes their jobs. From experience in many evaluations which used various types of questionnaires the author is convinced that an average of not more than 10 per cent of the returned questionnaires are of any value to the committee writing job descriptions. If this 10 per cent return was the only value to be expected from this approach, the use of ques-

tionnaires would not be recommended. A good questionnaire lets the employee know what characteristics are being considered in the evaluation of jobs. It brings to his attention the different levels or gradations of the characteristics in question. He is again informed that he has certain responsibilities, such as the safety of his work partner. The questionnaire is, therefore, a double-purpose medium. It attempts to get the best information possible regarding a specific job and at the same time disseminates in a simple manner the primary fundamentals of job evaluation. Although the quality of the results obtained through the use of questionnaires may be controversial, its utility as an educational influence can not be denied.

Timing of the Questionnaire

It is obvious that no questionnaire can be issued prior to the time the committee selects the work characteristics. Neither can the committee proceed with the writing of job descriptions without having some material to work with. That material must come from either interviews or questionnaires. The timing of the questionnaire's delivery to the employees is thus simplified. If the program is of some little size there is considerable work involved in making arrangements for issuance of questionnaires with an accompanying letter of instructions, collection of questionnaires, and filing of the results. Committees often utilize this time-interval by starting to work on the compilation of the job evaluation manual.

Questionnaires should never be sent or distributed to employees without an accompanying letter and instructions as to how to answer the questions asked. Figure 15 illustrates the tone and approach that such a letter should take. The letter must of course be aimed toward the employee level and, if the program is a joint effort, should be signed by persons whom the employees know.

To: ALL FACTORY EMPLOYEES From: JOINT JOB EVALUATION COMMITTEE
 Date:
 Subject: JOB EVALUATION QUESTIONNAIRE

A joint committee of management and union representatives is now engaged in evaluating the jobs in the company. The purpose of JOB EVALUATION is to determine how any particular job or type of work rates in relation to all other jobs.

For the best results it is important to obtain information from persons who are familiar with the job, and usually no one is in a better position to describe a job than the person actually doing the work. The contribution of different points of view largely eliminates the errors, whims, or prejudices which are likely to occur when a single individual or small group writes the description.

We request that you fill out the attached questionnaire, giving your description of your job in your own words. With the aid of these questionnaires a Job Description will be prepared which will be used to evaluate the jobs throughout the company.

Bear in mind that the purpose of this questionnaire is to obtain a description of the job and not the individual working on the job.

The enclosed sample questionnaire, we hope, will assist you in formulating your answers.

Please fill out and return the questionnaire to the person who gave it to you within twenty-four hours.

The Committee thanks you for your co-operation.

Fred Hale	N. O. Kleerup
P. W. Robinson	T. T. Thompson
Joseph Murray	Ralph Kemmetly
E. O. Douglas	F. Grames
John Boulter	Bud Moyer

Figure 15. Committee letter to accompany employee questionnaire.

Questionnaire Instructions to Employees

The average employee receiving a questionnaire and an accompanying letter still requires further instruction properly to fill out the questionnaire. He usually welcomes the opportunity of seeing a completely filled-out sample pertaining to some job with which he is well acquainted. It is well to suggest in the instructions that the employee compose the answers to his questionnaire on a separate sheet of paper and, after reviewing and checking them, copy them on the form provided for the purpose.

Suggestions should be offered to the employee in the spirit of helpfulness, but they should never be of a leading nature. The following points, which are typical of such instructions, have proved successful in questionnaire work:

1. Employees should never be made to feel that all answers must be confined to the limits of the sheets furnished. Where the employee is asked to describe in detail, the employee should do exactly that, even if it takes extra sheets of blank paper.

2. Try to get the employee to feel that he should so describe his job that even the most uninformed could easily visualize the job after study of the answer given. Let the employee explain his job in his own language in much the same way as if he were really trying to teach it to a new hand.

3. The employee should be told that facts alone are sought, and that attempts to embellish the job with adjectives have no value in the final analysis in so far as he is personally concerned. In fact, embroidering on the job's description in part or in whole makes compilation of the ultimate job description more difficult. The statements must be plain. Those who are to write the job descriptions want to be furnished with the bare facts, and are not interested in an appraisal of the worth of the job. That will be done later by the evaluation committee.

4. Answers to the questionnaire must be original. There is always a tendency for certain groups of employees working

at the same occupation to collaborate with their fellow workers. Such attempts defeat the very purpose of sampling employee opinion. Massed thinking of employees often misses important details of the work that should be considered by job analysts.

5. An attempt should be made to try to get the employees to shun the use of personal pronouns. This is often difficult to accomplish, but if enough emphasis is placed on this point the questionnaire material will usually be of higher caliber because the employees are forced to think just a little bit more of the job, and less of self.

6. Examples should be cited to illustrate the detail which is expected. If, for example, the employee was a finished parts inspector, it would not be sufficient for him merely to state, "I assist in the inspection of parts for the flight gyro." The analyst wants to know where the inspections are made, with which persons the employee comes in contact, what the specific parts inspected are, and what the purpose of inspection at this point is. Also needed is information relative to what reports are made out, to whom are they sent, and if further inspections are made is the employee consulted.

7. Impress upon the employee that he is expected to turn in a questionnaire that is really good. Thank him for his co-operation in assisting the committee and assure him that he shall see copies of the job descriptions when they have been completed.

Distribution of Questionnaires

The manner of distribution of the questionnaires will be dependent entirely upon the situation in the individual plant. For the smaller plant which may be unorganized, the proper method would be to have the foreman hand the questionnaire to each of the employees in his department. Larger plants may resort to the use of office equipment in

the preparation of envelopes, and mail the questionnaire to the home address of each employee.

In plants where a joint job evaluation committee exists, the distribution of questionnaires may be viewed differently. The evaluation program is new to union committee members and they usually like to be identified with anything connected with the work. Accordingly, the distribution in this case may result in joint distribution efforts: stewards may be asked to assist the foremen in supplying each employee with necessary instructions and questionnaires. Questionnaires should be distributed near the close of the working day so as to prevent excessive handling around dirty equipment. Soiled questionnaires are hard to read and unpleasant to handle during analysis. Experience has also proved that if employees are given questionnaires at the close of the work day, they more often take them home and fill them out at their leisure. It is needless to state that such returns are always of better quality, and that this method usually accelerates the prompt return of the completed questionnaire.

Collection of Questionnaires

Questionnaires can be collected by asking the employees to return them through the same avenues by which they received them, or by providing a large box built on the order of a ballot box, which ensures that returned questionnaires are not tampered with. Occasionally there are some persons who prefer to keep secret their efforts to help the committee. They do not even want their foreman to scan the completed questionnaire. Other employees take personal pride in their ability to describe their jobs, and delight in showing the results to anyone who has the time to look at their completed questionnaire. No definite rules can be established which will handle all of the conditions which are to be found in the average plant. Some of the returns will always be mailed to the committee through government

mails. The company mail clerks should be notified where to send such returns.

If a time limit has been established, the employees should be made to realize the fact, and co-operate accordingly. It does not help a program to have returns straggling singly or in groups. By insisting that a deadline be maintained, the employees will have good cause to believe that the committee is really working according to a schedule. A "thank-you" notice signed by the committee and posted on all bulletin boards is in order after the returns are in. This gesture of appreciation is usually well received and also serves the purpose of notifying employees that the next phase of work is about to begin.

Filing the Questionnaires

This section pertains to the handling of the questionnaire returns of particularly large plants or groups of plants. Different colored sheets may be used to good advantage where multiple plants are involved. The returned questionnaires should be filed by plant, by division of plant, and by section. In the meantime a complete listing of all employees has been set up by plant, divisions of the plant, departments, and sections. Each of the returns should then be scanned for the purpose of correcting purely mechanical errors. Some suggestions for this preliminary examination include:

1. Check the name of the occupation as stated by the employee with the list of acknowledged jobs. If the employee states that the name of his regular occupation is "table lathe operator," which does not appear on the list, it is obvious that he meant "bench lathe operator," which had been acknowledged as a job to be considered. The correction should be made at once.

2. Write the official job number or designation on the sheet as soon as it can be definitely determined from the answers given by the employee. In the case of multiple-

level jobs designated by the symbols A, B, or C, then the return should contain the job numbers of all levels of the job in question. To ignore these data would be to classify the employee before job descriptions had been written.

3. Record opposite each name on the list of employees the job number or numbers pertaining to the questionnaire returned by that employee. This will show that the employee co-operated, and the list will also serve as a directory when the time comes to send out copies of job descriptions for employee approval.

4. If the description of the job is perfectly clear, and all of the questions have been answered, then the perforated slip containing the employee's name, clock number, and department is detached from the questionnaire and the identical job number or numbers are written on the slip. After the composite job descriptions have been written, they should be filed by number. By utilizing the same slips a clerk can pull the proper ones from the file of completed job descriptions, and by clipping the two together the slip serves as an address in locating the employee concerned.

Analysis of the Questionnaires

From a cursory inspection the average person can discard certain returns that contribute little or nothing to the program. Some of the returns will be of the "grievance type" in which the employee has used the sheet as a medium for expressing dislikes for company practices and procedures. Some questionnaires will have filtered through from those employees who were still on a probationary basis, and of course were totally unqualified to describe the requirements of the job they work on. Such returns as these should be scrapped at once and should not be allowed to become part of the data sheet. See Figure 15.

The remaining questionnaires will fall into one of the following general classifications:

1. Those which are excellent in quality, fully detailed, and show that considerable time and effort have been devoted to the task.
2. Those which are of average quality, which will be the majority. Answers are given in one or two words, and usually no attempt is made to give reasoned answers.
3. Those which show clearly that the employee collaborated with a fellow worker in filling out the questionnaire.

One person should be made personally responsible for the entire analysis process. To have differing interpretations of this phase of the work would involve the co-ordination of opinions later. This aspect of the work of analysis is closely related to straight statistical procedures, and almost any orderly approach along such lines will provide adequate information for those who are to write the job descriptions.

In many instances statistical work is entirely unnecessary, for the analysts merely want employee returns in such shape that data is readily available for reference. In actual practice employee questionnaires are seldom used after the preliminary rough drafts of the job descriptions have been prepared. To reiterate, the real utility of the questionnaire is found in the psychological reaction it has upon employees. The true utility from a practical standpoint is not to be stressed. Any number of job evaluation programs have used questionnaires, only to scrap them upon beginning the real work of the program. The questionnaire-return method should never be considered as capable of developing material of such quality that job descriptions can be written solely from their contents.

The Supervisor and the Questionnaire

Supervisors should review questionnaires before they are analyzed. They should look over the returns from the viewpoint of correctness of the statements, rather than the manner in which the employee has expressed himself. For example, an employee may have stated that his job required

him to grind his own tools. Such a statement may have been occasioned because at some time or other he actually had ground tools in an emergency; however, it was not a regular part of the job. When such corrections are needed the employee should be consulted and the matter discussed in such a manner that the changes are made by the employee rather than the foreman.

Supervisors are usually interested in reading the questionnaires, as by this means they receive at first hand the employee's concept of his work. By skillful interpretation of these comments the foreman can often clarify certain points that the employee may try to develop. This supervisory review thus benefits the analysts who have the task of writing job descriptions.

The Union Steward and the Questionnaire

All that has been said regarding the usefulness of the supervisors in reviewing questionnaires applies equally to union stewards. In addition, the steward is given a probably welcome opportunity to convince the employees whom he represents that his position helps them rather than being purely political. Some of the finest questionnaire returns which the author has been privileged to study were those which resulted from the friendly competition of departmental stewards. These stewards, realizing the importance of the work, decided that the returns from those people working in their departments would be so clear that the evaluation committee could not possibly err in the evaluation process. The really qualified union steward will usually welcome the opportunity to be of service.

7. JOB DESCRIPTIONS

Why Job Descriptions Are Necessary

JOB DESCRIPTIONS containing factual data of the requirements of individual jobs are the bases of the actual evaluation processes. Differentials in the degrees of these requirements determine differentials in wages. To analyze carefully and to record the analysis of the requirements of each job is merely the establishment of a good job description, covering all the conditions then present. Unless an actual job description is written the human mind soon forgets it, and the mental picture which seemed so clear at the time soon fades into a haze, and the facts about it are lost forever.

Without fear of contradiction it can be said that an accurate evaluation could be achieved by a group of competent evaluators without the use of job descriptions. The results would stand up under the close scrutiny of the moment, but it is the long-term results that are sought, and such an evaluation would be desired only by those who are not particular whether or not the employees are going to accept the descriptions. In the absence of job descriptions, there is no defense against the grievances which arise when wage adjustments are made. On what basis would an employee know how his or her job was measured? What would the evaluation committee say to an aggrieved employee who might ask if it had considered certain requirements of his job? No individual, or the committee as a whole, would be able to remember all the details of all the jobs which had been evaluated. It is, therefore, of vital importance that some device be used which will speedily recall to the minds of the evaluators just what was considered in the measuring processes. Unless such devices are available it is impossible for the committee ever to attain the same answer or even

an approximation of it, should re-evaluation of jobs be demanded.

The job analyst must have precise information. Too often, job evaluation committees attempt to work from job descriptions which are not clear enough to be measureable. There is always a direct relationship between the relative wages established by evaluation and the degree of clarity of the job descriptions which have been used in the evaluation.

Practical Uses of Job Descriptions

Job descriptions, or job specifications as they are sometimes called, have other uses in industry than just supplying a sound foundation for the determination of equitable wage rates. Some of their more common uses are:

1. TRAINING EMPLOYEES AND SUPERVISORS

In the course of acquiring data to make up the job descriptions, the evaluator has usually talked to the employee at his workplace, the department supervisor, the union steward, other union members, and other specialists. As a result, the description in most cases is comprehensive and clearly shows the requirements of the job. This information can be used in training new employees as well as in assisting newly appointed supervisors.

2. UNIFORM JOB DESIGNATION IN LARGE COMPANIES

In a company which operates plants in various geographical locations it is often difficult to secure uniformity of job titles. An Iowa plant may classify a certain job by the trade name of the machine with which the operator works, while in another plant of the same company the job is classified according to the functional name of the operation. Variations in job titles do not come about intentionally, but accidentally. When uniformity of titles is lacking, inequities

in hourly rates are certain to result. The absence of uniformity of titles within the confines of one plant will also introduce inequities.

3. WAGE SURVEYS

If a company expects to conduct periodic wage surveys the use of job descriptions will simplify the problem of conveying job content to other companies for comparison. In normal times many companies are frequently asked to participate in wage surveys being conducted by one company, or by a group of companies which have formed an association. Well-conducted surveys usually are based on specific job descriptions which have been chosen as representative of the wage structures being studied. The burden of the work, of course, is passed on to the company receiving the request. Actually such participation in wage surveys may soon become a real chore, especially if the company solicited is well known in the industry or the community. The author believes that as job descriptions have been prepared for the evaluation process and other uses, the actual burden of matching jobs should be returned to those persons who are making the survey. This can be accomplished by selecting those job descriptions which are the nearest to those requested. It is a simple matter to write existing rates or rate ranges upon the job descriptions. (See Figure 16.) It is believed that the total results of the survey would also be of better quality.

4. EMPLOYMENT AND PLACEMENT

Job descriptions can be used to determine the requirements of the job and the specific qualifications required of potential employees to perform the work satisfactorily. This use is one of the natural by-products of any job evaluation program. If job evaluation is properly used in the company's personnel offices, it will be genuinely helpful in matching the right man to the right job. Detailed information within

Figure 16. Job descriptions for wage surveys.

ready grasp of the interviewer helps to place the entire process of selective employment upon a sounder basis.

5. LABOR GRIEVANCES

Clear concise statements of job content and responsibilities based on factual data become the common ground upon which management and labor should discuss disputes occasioned by labor grievances. The limiting factors which are so often expressed in good job descriptions of production processes frequently tend to swerve the dispute from an emotional to a rational basis. Grievances have been known to be quickly and satisfactorily settled when job descriptions have been introduced into the case. Properly written job descriptions become increasingly important in bettering employee relations and morale.

6. HEALTH AND SAFETY

Job descriptions can be used to assist the person responsible for the safety and the health programs within a company. They help to locate those hazards which were unearthed during the evaluation processes. Unless the hazards are minimized, the company will continue to pay premium rates on some of the jobs. Hazards are acknowledged in all job descriptions where they exist, and reference to such hazards should be good cause for the safety department to analyze the conditions leading up to their existence. Job descriptions, therefore, serve indirectly in a preventive capacity.

7. PROPER UTILIZATION OF EMPLOYEES

Job descriptions can be of great utility to progressive managements. One job description gives detailed information regarding that job. Therefore, a collection of all job descriptions means that there is information available for

all work performed which can be used as a basis for departmental and organization comparisons. The descriptions will aid those who would study efficient use of existing skills and facilities. Overlapping of duties, duplication of effort, poor planning, and management failures are often bared to those trained in interpreting job descriptions.

Development of the Job Description Form

All of the careful thought that normally would be given to the preparation of any other industrial form should be exercised in designing the job description form. There are no limits to which one may go; yet there are very definite minimum requirements. In practice, these forms vary greatly. The quality of paper, its size and shape, and the methods of reproduction used will depend upon the purpose of the form the company decides upon. For discussion almost all job description forms can be divided into four sections:

1. The heading.
2. Detailed description of the job.
3. Breakdown of details of the job.
4. Physical and emotional demands of the job.

1. THE HEADING OF THE JOB DESCRIPTION FORM

A. *Title.* This section pertains to all the necessary data required properly to identify the job. The title or classification used must always appear on the list of acknowledged jobs. Job titles should be capitalized not only on the job descriptions but also wherever they appear on any records.

B. *Job Number.* All forms must provide a space for an official number or classification symbol.

C. *Date.* Space must be provided for dating the description. It is not necessary to date each description the exact day that it was completed. It is preferable to give all of the descriptions the same date. This sets up a definite tie-in with the work of the evaluation committee, and in the future read-

ily identifies those job descriptions which have been revised in any interim period.

D. *Federal Code Number.* When the job in question is identical to one of the jobs described in the United States Department of Labor's *Dictionary of Occupational Titles*, some provision should be made to record the code numbers. Just how important these government job descriptions will become in the years to follow cannot be estimated at this time. Undoubtedly some industries will adopt them and others will continue to use job numbers of their own choice. For purposes of cross-checking, the little extra effort involved is believed worth while. The main disadvantage of these code numbers for everyday use lies in the large numbers of digits that are employed. For example, the job "toolroom grinding machine operator" has dictionary code number 5-84.110, which is impractical for common timekeeping procedures. It is suggested that space on the job description form be provided, and, when evaluation has been completed, someone be assigned the task of applying the appropriate dictionary code numbers.

E. *Department Number.* Requests may be made later for a list of all jobs in a certain department. If the job number does not incorporate this identifying feature the absence of department identification results in extra work.

2. DETAILED DESCRIPTION OF THE JOB

This section of the form contains a concise and clear statement of the job. At this point it is necessary to differentiate clearly between what is commonly referred to as "job analysis" and the descriptive analysis now desired. A job description does not mean a recording of the movements of an operator such as one would expect to find on time and motion study sheets. Perhaps by citing what is *not* wanted the writer of job descriptions will be in a better position to visualize the goal desired. The following is a part of a job analysis showing an

undesirable approach used in describing the work of an engine lathe operator A:

Sets up lathe to turn stock held in a chuck; attaches to lathe the accessories, such as chuck and tool holder, necessary to perform the machining, threading, and locking of the chuck on the headstock spindle, and setting and tightening the tool holder in the tool post with a setscrew (tool post screw) and wrench. Opens the chuck jaws to the approximate size of the workpiece with a chuck wrench, inserts the workpiece between the jaws, and tightens the jaws down on it. Carefully centers the workpiece between the jaws, locating a dial indicator against the workpiece, etc. . . .

Such a job analysis could run for paragraphs in an attempt to tell every action of the operator, when the simple statement, "Capable of setting up any part," aptly describes to the evaluator the skill requirements of that part of the job.

Experience in many evaluation programs has repeatedly shown the advantages of recording "examples of typical work" at some place in the job description. Often the evaluator or the casual reader is able to identify instantly the job in question. The usual place to record these examples is following the detailed description of the job in question.

3. BREAKDOWN OF DETAILS OF THE JOB

This section is frequently referred to as an "analysis of job requirements and conditions." In many instances it will be found impossible to record the details without actually duplicating phrases or expressions which are to be found in the body of the job description. The form should be laid out so that space is provided for each of the work characteristics which have been selected. The form of layout is of no consequence, although there should be sufficient space allotted in each box or after each question by means of rules to provide for recording data, degree codes, and evaluations in points for that part of the job.

Some forms have been so constructed that the columns provided for point values run horizontally instead of vertically, a

procedure which makes adding columns of point values difficult. In the interest of uniformity the vertical column method of recording values should be adopted.

This section will contain the total evaluation in points for the job, and as that is the most important figure the form should be so set up that that figure is readily found. The bottom of the sheet should also provide places for approvals, unless it has been decided that a covering statement of approval is to be printed on each of the job-description sheets.

In keeping with one of the fundamental concepts of job evaluation, which states that the purpose of evaluation is to determine the relationships of jobs, it is believed good practice to eliminate any reference to money values. From a practical point of view the job description sheets would become obsolete at the time of the first upward or downward revision of wage rates and ranges. It is much easier to prepare supplementary sheets containing money values for each of the jobs and change them, rather than to rewrite or reprint all of the job descriptions.

4. PHYSICAL AND EMOTIONAL DEMANDS OF THE JOB

Little is to be written regarding this section inasmuch as it is not strictly an integral part of a job evaluation program. There are an increasing number of companies which are beginning to realize that no regularly established procedures have been worked out for determining the actual physical demands of occupations as matched against the handicaps of applicants. In the past, the physically handicapped and the emotionally unstable have always been employed and they will continue to be employed. The problem of selective employment can be simplified if the interviewer is able to match up the work available with the potential employee. Handicapped veterans have greatly accelerated the need for bettering this phase of employment. Properly to place an employee it is necessary for the company to know at the outset what operations can be performed satisfactorily under

all combinations of disability. The occupations must therefore be analyzed to determine the physical effort, working conditions, and emotional factors to which employees are subjected. For all practical purposes the job description is usually used to record this information. To attempt to record this type of information elsewhere would mean duplication of effort. A separate recording might become inaccurate, and thus obsolete, were a job's content changed and the corresponding sheet overlooked.

For those who would care to study this subject an excellent book entitled *Physical Demands and Capacities Analysis* * has been published. Its Preface states that no claim is made for its perfection, and that the type of work discussed must be considered to be in an experimental stage. However, as the author presents it, the work is so far advanced that he believes that the basic fundamentals proposed will eventually become the framework and technique used in matching the physical characteristics of workers and jobs. That approach spells the end of the careless use of such terms as "none," "moderate," or "great," and by means of funneling methods makes it entirely possible to define specific demands of various jobs. It presents positive approaches placing emphasis on physical capacities, and soft-pedals the medical diagnoses. The study opens new vistas to those who are interested in job re-engineering, safety, vocational training, and physical education as related to industrial needs.

Standardization of Style

One of the most difficult problems in the development of job descriptions is the establishment of uniformity of style. No problem exists if the descriptions are written by one person. However, there are few programs of a size that will permit one person to perform this phase of the work in the time allotted. Job descriptions are usually written by several

* *Physical Demands and Capacities Analysis*, Oakland, California, Permanente Foundation, 1944.

analysts, and preferably by the committee itself. It is of major importance that all job descriptions have a uniform style. Lack of uniformity is bound to influence evaluation in some degree or other. There is no question regarding the high-quality work produced by skilled job analysts, but these advantages are often discarded in favor of committee-written descriptions. Either method has proved satisfactory and the final determination of the method should be left to the committee, which is in a position to know what is best under the circumstances.

Instructions for Writing Job Descriptions

Regardless of whether job analysts or committee members write the job descriptions, it is necessary to set up certain patterns which will help to create style uniformity in job descriptions. Any well-known job of unskilled nature can be selected for instruction purposes. The chairman of the committee should ask each committee member to prepare a job description in his own manner. Upon completion the instructor should read the rough drafts, emphasize their good points, and criticize constructively their weak points or those phrases which may be ambiguous. The instructor should be careful not to disclose the identity of the writers. After a review, the group should be asked to rewrite the same job so as to determine whether or not the style is more uniform.

In writing job descriptions the instructor must emphasize repeatedly that *all job descriptions must contain references that will provide evaluators with data by which they can evaluate all of the characteristics of work which have been previously selected by the committee.* The easiest method of preventing omissions is to supply each evaluator with a form which lists all of the characteristics. This forces the amateur description writer to consider all characteristics of work as selected in writing the preliminary or rough draft of the job description. (See Figures 17-24, inclusive.)

Job Description Work Sheet

Division_____

Job No._____

Date_____

Dept._____

Job Name_____

Occupation Detail_____

Example of Typical Work_____

Education

Actual schooling_____

Experience and training_____

Skill

Manual skill_____

Mental skill_____

Dexterity_____

Responsibility

Safety of others_____

Spoiled parts and materials_____

Damage to machines and equipment_____

Mental Effort_____

Physical Effort_____

Working Conditions

Hazards_____

Surroundings_____

Connected expense_____

Figure 17. Job description work sheet.

JOB SPECIFICATIONS								
JOB TITLE								
KNOWLEDGE Degree Points		Math						
		Arithmetic						
		Blueprints						
EXPERIENCE		Time to learn job						
INITIATIVE AND INDEPENDENCE		Interpretations	Plan and Perform	Decide	Procedure			
		Simple Detailed	Verbal Written	None Diffrnt	None Minor	(General)	Standard General	
PHYSICAL DEMAND		Material	Effort	Work Performed				
		Light Weight Ave. Weight	Heavy Weight (Occupational)	Little Frequent Continuous	Frequent Continuous	Occasional Sporadic	Often Extremely	
MENTAL-VISUAL DEMAND		Amount and Continuity		Degree				
		Little	Frequent Continuous	Automatic	Class	Extending		
RESPONSIBILITY EQUIPMENT		Probability	Amount					
		None Little Some Great						
RESPONSIBILITY FOR PRODUCT		Probability	Amount					
		None Little Some Great						
RESPONSIBILITY FOR SAFETY OF OTHERS		None	Reasonable Care—Minor Acc.	Last Time	Competent Care—Severe Acc.	Absolutely Correct Action		
RESPONSIBILITY FOR OTHERS		None Major Great Leader						
WORKING CONDITIONS		Class	Dust Fumes Vibration	Oil Grease Ozone	Aids	Overhead Frequent Continuous		
UNAVOIDABLE HAZARDS		None Minor	Ext. Time Inconveniences	Fall	Burns Cuts Injury	Pressure Heat Cold	Gas Dust Electrolyte	
Total Points								

Figure 18.

JOB ANALYSIS SHEET				
FORM 1 I.M.S.		PLANT NO.		
PLANT JOB TITLE		CODE NO.		
OCCUPATIONAL DICTIONARY TITLE		DEPT. NO.		
DEPT.				
ATTRIBUTE	ANALYSIS — RATE THE JOB NOT THE MAN		ANALYSIS GUIDE	
1. PHYSICAL EFFORT			Endurance Exertion Not Sustained Ordinary Constant	Strength Up to 5 lbs 5 to 30 lbs 30 to 100 lbs
2. HAZARDS			Accident Minor Cuts Severe Burns Brok'n Bones Fatality Seldom Occasional Frequent	Health None Minor Major Temp. Major Perma.
3. JOB CON- DITIONS			Discomfort None Some Considerable Great	Clothing Spoilage Comp. Furn. Ordinary Shop Wear Considerable Wear Excessive Wear or Damage
4. SUPERVI- SION			Received Always Avail Usually Avail Self Supervisory	Assign Work None Has Helper Assigns Work
5. RESPONSI- BILITY FOR THE SAFE- TY OF OTHERS			No Possibility of Causing Injury Considerable Care to Prevent Injury Great Care to Prevent Injury <small>Resp. for Equip., Methods, Etc. involving Sev. Health or Acc. Hazards</small>	
6. RESPONSI- BILITY FOR EQUIP. AND MATERIAL			Equipment Single Loss May Amount \$0 to \$100 \$100 to \$500 \$500 to \$5000 \$5000 to \$30,000 \$30,000 and Over	Material Weekly Loss \$0 to \$50 \$50 to \$100 \$100 to \$1000 \$1000 to \$5000

Figure 19.

JOB RATING - SUBSTANTIATING DATA		Code No.
JOB NAME:		
DESCRIPTION:	Class	
	Score	
	Grade	
	Dept	
EXAMPLES OF WORK	Date	
FACTOR	BASIS OF RATING	
TRADE KNOWLEDGE		
LENGTH OF TRAINING		
COMPLEXITY OF WORK		
PHYSICAL EFFORT		
MENTAL-VISUAL CONCENTRATION		
DAMAGE TO EQUIPMENT		
LOSS OF PRODUCT		
SAFETY OF OTHERS		
WORK OF OTHERS		
WORKING CONDITIONS		
ACCIDENT HAZARDS		

Figure 20.

**Data Sheet (Trades, Skilled and Unskilled Labor,
Miscellaneous Operating Positions)**

	Job number	Grade index				
1. Job name						
2. Div	7. Number normally employed	10. Hours _____ to _____				
3. Dist	8. Scale	Day _____ Night _____ Month _____ Overtime _____				
4. Dept.						
5. Sub-dept.	9. Personal tools required					
6. Reports to						
11. Duties (list machines used with attachments, etc., if important)		12. Special requirements (Special knowledge, skill, personal qualities, unusual strength, etc.)				
13. Hazards or unusually disagreeable working conditions None _____ Hot wires _____ Explosion _____ Poisonous fumes _____ Extreme Heat _____ Dampness _____ Exposure _____ Cramped position _____ Eye strain _____ Poor ventilation _____ Miscellaneous _____						
14. Decisions made, responsibilities assumed, errors possible						
15. Minimum requirements						
Schooling	None	C. G.	H. S.			
Mental alertness	Unim- portant	Low average	Average	High average	Unusual	
Years of apprenticeship	0	1	2	3	4	5
Outside experience	None	Some	Extensive	Very extensive		
Company experience	None	Several months	Over a year	Several years		
16. Remarks						

Figure 21. Job evaluation data sheet.

CHAMPION PAPER AND FIBRE CO. HAMILTON DIVISION									
Job Title	Alternate Titles	Dept	Normal Force	Shift					
Name of Employee	Years with Company	Clock No.	Hours From _____ To _____	Name of Immediate Superior					
Base Rate									
Extra Pay									
Exempt									
DUITIES — Regular (Use Extra Sheet if Needed)									
DUTIES — Occasional									
Work Received From	Work Sent To								
<u>MENTAL REQUIREMENTS</u>									
Elemental Abilities									
Creative	0, 1, 2, 3, 4, 5, 6, 7, 8	Add and Subtract	Job Instructions	Personal Qualities					
Reasoning	1, 2, 3, 4	Multiply and Divide	Wrestle	Patience					
Comprehension	1, 2, 3, 4	Fraction Decimals	Shop Trucks	Tired					
Calculation	1, 2, 3, 4	Shop Arithmetic	Other	Unpleasant					
Grade		Percentages		Smart Expressions					
Special		Prepares Records		Serious Memory					
Remark									
<u>SKILL REQUIREMENTS</u>									
Kind of Skill									
Desirable Experience	Additional Time for	Acceptable Proficiencies	Company Job to Which	Precision or Work Limits					
Increased Time to Learn Basic Routines		This Job Quality Leads	Company Job	7000					
Competency Job Which Team for The Other Operators	Varied	Machine Operation	Set up	Good Handwriting					
Repetitive	Hearing	Touch	Average	Not Needed					
Kind of Sensor Training									
Sight									
High Degree									
Color Discrimination									

Figure 22. Job analysis record.

Job Title and No.	Alternate Title	Dept.	Normal Force	
Duties			Date	
Promote from	Promote to			
Mental Requirements	Skill Requirements	Physical Requirements	Responsibilities	Working Conditions
—years general education Kind of special education	Kind	Kind of equipment Materials Tools	Type Surroundings Illumination Atmosphere Hazards	Place
Kind of work knowledge	Inexperienced — Time to learn; Basic Acceptable proficiency Desirable prior experience	Age limits _____ to _____ Minimum height _____ Minimum weight _____ Sex M. _____ F. _____	Savings—how Supervision Employee contact	Shift _____ Hours from _____ to _____ Hours from _____ to _____ Others
Mathematics used	Precision limits Operation Color discrimination Kind of sensory training Dexterity	Much fatigue Great strength Endurance Exceptional eyesight Other factors	Records	
Reads orders Prepares records Job instruction Monotony Distractions Personal qualities				Approved _____
<p>REMARKS: Use X, to indicate; XX, to stress; R, required; P, preferred; or show percentage or amount.</p>				
<p>Prepared by _____</p>				

Figure 23. Job specification sheet.

The following suggestions are given to assist instructors who are responsible for the training of description writers:

1. Personal pronouns should be completely eliminated from all parts of job descriptions. If it is necessary to refer to the job incumbent, a term such as *operator* or *trainee* may be used.
2. Generalized or ambiguous expressions such as *prepare*, *assist*, or *handle* should be omitted unless supported by data which will clarify them.
3. Words which compress expressions of functional duties into a mere statement are valueless. As an example, in describing the job of "band saw operator" to say "Usual hazards of wood-working equipment" would be meaningless inasmuch as the evaluator would not know whether the planer, jointer, ripsaw, shaper, or other hazardous wood-working equipment is referred to.
4. Short cuts in description writing should not be tolerated. There is always a tendency to lessen the work by using such statements as "Identical to . . ." or "Similar to . . ." These tag phrases render the description worthless for reference purposes and delay the evaluation process.
5. Job descriptions must describe accurately the job as it is being done at the time. Frequently supervisors make efforts to have the job described as it should be done. The job analyst cannot describe a job that does not exist, nor can such a job finally be evaluated.
6. Recording the "know-how" of a job is of prime importance, for how the work is performed is directly related to the methods used by the employee in task accomplishment. The use of machinery, equipment, tools, precision measuring instruments and the routine procedures of the job are all to be recorded. Mental requirements of a job would require the same scrutiny. What are the necessary mental applications required by the job? What are the alternate methods of doing the work which are left to the judgment of the operator on the job?

Job Analysis Data Sheet

1. Designation of Job _____ Mill _____

Alternate Designation _____ Dept. _____

2. Duties. Describe in detail. The terms used should denote action. Begin each sentence with a word which denotes the act of accomplishing an objective. List also the major requisites of the ideal employee.

3. Items making up the elements of the job and the attributes of the ideal employee for the job

A. Mental requirements

	Evaluation ¢/hr.

B. Skill

C. Physical requirements

	Evaluation
	\$/hr.

[Continued on following page.]

Figure 24. Job analysis data sheet.

D. Responsibility

Evaluation

\$/hr.

E. Working conditions

Evaluation

\$/hr.

4. Other Data Influencing the Job or Employee

Number on this job for each shift _____ Total on job at present _____

Standard working hours

A.M.

P.M.

Permanent assignment _____

Alternate assignment _____

Shift arrangement if rotating _____

Hours per week _____

Overtime provisions _____

Method of payment _____

Promotions: From _____ to _____

Number of men supervised _____ Direct superior _____

Substitute occupations which can be utilized _____

Personal tools which employee is required to provide at his own expense

Figure 24 (*Continued*). Job analysis data sheet.

7. All statements should be clearly and simply set down. The goal is not to copy down the employee's own appraisal of his job. Promiscuous use of adjectives only reflects one man's opinion of the job and must be minimized in the best interests of the program.

8. Record all details which are considered differential factors of the job. Where does the operator work? With whom does he come in contact? What are the precise acts that constitute his work? These are but a few of the questions that each analyst should use in examining jobs. Not all jobs will require the same degree of detail, but the description writer must be able to select those that do, and enter details where requested.

9. Descriptions of those jobs which are part of a group, or processing team, must definitely establish such relationships. In evaluating such jobs the prevailing conditions must determine uniform evaluations for all jobs in that job-family.

10. If it is necessary to use unusual or technical terms in the job description they should be explained. For example, if a "Phillips head" is mentioned, it should be explained that a screw with a certain type of patented head is meant.

11. The length of a job description is immaterial so long as it adequately describes the job. It would be ridiculous to instruct job analysts to make all job descriptions approximately the same length.

12. When the job analyst finds that the data he has to work from are insufficient he should stop immediately and get the necessary information. There is no place in job evaluation for guesswork or "faked" job descriptions.

13. All job descriptions should contain the initials of the person who compiled them. With this requirement the quality is usually better.

Sample Job Descriptions for Job Analysts

In order to hasten the arrival at standardization and style uniformity of job descriptions, all job description writers

should be given sample or model descriptions on which to pattern their efforts. These should be used until each person develops the style which has been declared acceptable. In beginning this work each writer should be assigned only a few jobs to work on, and the instructor can then make corrections and suggestions about their style and content. The writer will soon start producing acceptable job descriptions if he knows that his work is being carefully checked. Once a person has acquired this skill there should be little fear regarding his capacity to continue producing good work.

Assignments of Job Descriptions

The actual assignment of writing specific job descriptions should more or less be left to the committee to decide among themselves. Allotment of descriptions is a matter of simple arithmetic if each member accepts his share of the work. If there are 300 jobs acknowledged and 10 men on the committee, then each committee member will have a quota of 30 jobs. Each member should choose those jobs with which he is most familiar. Even with this arrangement it is often necessary to divide the work in such a way that some will have jobs which are strange to them and which will require a complete study.

All members of the committee should have lists showing individual assignments of jobs to be written. (See Figure 25.) No two analysts will work at the same speed and should some finish their tasks ahead of the others they should offer to assist wherever possible.

In scheduling completion dates of job evaluation programs, one of the unknown factors has always been the length of time necessary to develop the proper job descriptions. The consensus recognizes that this phase of the work is the most time-consuming of the entire program. Just how long should it take to prepare a good description? Actual observation and experience in many programs has shown that excellent results may be expected if a total of two hours has been allowed as the average for all jobs. This estimate is not cited for the purpose

JOB DESCRIPTION ASSIGNMENT May 14, 1943		
Committee Member: <i>J. Ruhlmans</i>	Completed	Revised
<u>Garage</u>		
82. Automobile mechanic	<i>May 15</i>	
83. Automobile serviceman	" 15	
84. Car washer	" 15	
85. Chauffeur	" 16	<i>May 23</i>
86. Driver, station wagon	" 16	
87. Driver, truck		
88. Helper, truck		
89. Driver, trailer truck		
<u>Gear Cutting</u>		
90. Gear burnishing machine operator		
91. Gear shaving machine operator A		
92. Gear shaving machine operator B		<i>May 20</i>
93. Gear hobbing machine operator A	" 20	
94. Gear hobbing machine operator B		
95. Gear shaper operator A		
96. Gear shaper operator B		
97. Gear generator operator, bevel gear A		
98. Gear generator operator, bevel gear B		
99. Thread milling machine operator A		
100. Thread milling machine operator B		
<u>Precision Grinding</u>		
101. Grinding machine operator, surface A		
102. Grinding machine operator, surface B		
103. Grinding machine operator, surface C		
104. Grinding machine operator, cylindrical A		

Figure 25. Committee job-description assignment sheet.

of establishing a goal, but rather for the purpose of assisting in the scheduling of a program. (See Figure 25.)

Scheduling the Writing of Job Descriptions

To the uninitiated the writing of job descriptions is often downright drudgery. By this time, the committee members fully realize the importance of having good job descriptions, but some of them may begin to question their own ability after having tried to write a few. Some members of the committee may even seek to be relieved from the task assigned. This should not alarm the person in charge as it indicates nothing more than real sincerity and concern on the part of the member. Often a change of assignment to a different department will prevent a man from going "stale."

The supervisor of the program should prepare a listing of all jobs requiring job descriptions and the names of those persons responsible for writing them. This should be posted in the room in which the committee meets. When a job has been written up and the description is acceptable, then that job should then be checked off the list. In this manner the chairman or the supervisor can closely control the schedule, gently rebuking those who are behind schedule, and by the same token praising those who are on schedule or bettering the schedule. (See Figures 25, 26, and 27.)

Rough Drafts of Job Descriptions

After all job descriptions have been completed, copies may be reproduced in sufficient quantities so that each employee will receive a description of his job. Each foreman and each steward should also receive copies of all jobs within their departments. There has always been controversy about bringing employees into the program at this point; however, it is believed that the expenditure of the additional time will pay dividends if employees, foremen, and stewards are again drafted to assist in the program. But further hazard that

1	4/21 to 4/28	2	4/28 to 5/5	3	5/5 to 5/12	4	5/12 to 5/19	5	5/19 to 5/26	6	5/26 to 6/2	7	6/2 to 6/9	8	6/9 to 6/16
Initial Meetings of Joint Committee	Compilation of Listing of Acknowledged Jobs		Approval of Acknowledged Jobs		Determination of Work Characteristics and their weighting		Compilation of Job Evaluation Manual			Writing of Job Descriptions		Writing of Job Descriptions		Writing of Job Descriptions	
PLANT SUB-COMMITTEES WORKING ON															
9	6/16 to 6/23	10	6/23 to 6/30	11	6/30 to 7/7	12	7/7 to 7/14	13	7/14 to 7/21	14	7/21 to 7/28	15	7/28 to 8/4	16	8/4 to 8/11
Writing of Job Descriptions		Writing of Job Descriptions		Employees' Supervisors' and Stewards' Approval of Job Descriptions		Review and Final Approval of Job Descriptions		Selection of Key-List Jobs		Evaluation of Key-List Jobs		Evaluation Week		Convert and Check	
CLASSIFICATION OF EMPLOYEES															

Figure 26. A timetable for the joint job evaluation committee.

Joint Job Evaluation Daily Time Table	
Month 4	19
	20
	21
	22
	23
	24
4	26
	27
	28
	29
	30
	31
5	3
	4
	5
	6
	7
	8

Figure 27. A daily timetable for the joint job evaluation committee.

must be guarded against exists in the proposed procedure: if job descriptions are issued in error to the wrong workers all of the employees may be stirred up. And if the classification methods have not been fully explained an employee might ask: "How can they classify me now, when the final job descriptions have not been determined?" To avoid such situations it is better to play safe and issue to all employees, except those on a single-skill job, the rough drafts of descriptions pertaining to all levels of skill for that job. The stewards and the foremen should be warned against making any commitments which might later embarrass them or the committee.

Employee Approvals

The purpose of obtaining the employees' approval of the job descriptions is, of course, self explanatory. It is absolutely necessary to obtain employee acceptance or all of the work will have been done for nothing. The employee should make an honest effort to weigh the contents of the committee's description of his job against his own conception of the work he is doing, and not against what he may believe himself capable of doing. A short letter, as Figure 28 or 29, for instance, should accompany the rough draft distributed to employees. The letter should carefully explain the purpose of this method of checking, and instruct the employee in the manner of checking. There is always a high percentage of employees who will not co-operate in work of this nature, and an equal number who are satisfied with the rough drafts. Over and above the beneficial results obtained by the employees and the committee, some constructive criticism can always be expected. The suggestions of employees which merit consideration must be incorporated into the program as quickly and smoothly as possible. The intimate knowledge of the men and the women actually doing the jobs described must never be depreciated. Employee suggestions and corrections of the rough drafts of job descriptions often furnish the final polish and sparkle that set off dynamic descriptions from the some-

To: ALL FACTORY AND FOUNDRY EMPLOYEES Date _____

Enclosed is a copy of the job description as written up by the _____ Job Evaluation Committee.

This copy is being returned to you so that you may read it and assist the Committee in every way possible to get the best description prior to the time it is evaluated.

Approximately 395 different jobs have been written into the job description form, and it is obvious that there will be errors in the job descriptions or details left out which are important and must be corrected.

NOW IS THE TIME TO ASSIST IN THIS IMPORTANT WORK.

If you feel that the description of your job is not right, we are asking that you correct it by writing in your suggestions on the sheet we have enclosed, and returning the corrected sheet, in the envelope provided, to your foreman. The Committee will then make whatever revisions are necessary.

The evaluation program is proceeding rapidly, but with all care, and we ask your co-operation once more.

If you do not wish to make any corrections or suggestions on the job description, you do not have to return the job descriptions.

Please make returns available to the Committee by Wednesday morning, July 9.

JOINT JOB EVALUATION COMMITTEE

G. Brown	P. Gilmore
R. D. Day	O. N. Smith
J. Wittner	E. Bumke
R. D. Rodgers	J. Drain
P. Aymon	F. Gilliar

Figure 28. One example of the letter accompanying the rough draft of the employee's job description.

To: ALL FACTORY EMPLOYEES
Subject: YOUR JOB DESCRIPTION.

DATE _____

Your Job Evaluation Committee has now completed the description of all of the various jobs through out the shop, and is sending to each employee a description of his own particular job.

The description has been prepared so that you may check it with your knowledge of the job. Since no one individual or group of individuals has knowledge of all the details of all the jobs in the plant, it is possible that in certain instances some of you will not agree with the job description as written. Please read it carefully, and, if any errors or omissions have been made, the Committee wants to have your suggestions as to corrections or improvements.

If the job description is reasonably correct, do not return it. If you are dissatisfied, note your corrections or comments on the description sheet and return it to your foreman. Where descriptions are not returned, it will be assumed that they are correct as written.

Returns should be in not later than Monday, February 8, and earlier if possible.

Your response in returning the questionnaires has been greatly appreciated, and your Committee is again asking for the same co-operation.

JOINT JOB EVALUATION COMMITTEE

s/ Joseph T. Shutt
Secretary

Figure 29. Another example of the letter accompanying the rough draft of the employee's job description.

times dull and uninteresting ones that seem to carry the label: "Office-composed." It is not necessary to have the job descriptions returned to the committee unless the employee has suggestions, corrections, and improvements to offer. The committee can profitably benefit only by handling those job descriptions to which employees take exception.

Writing Detailed Analyses

After employee comments have been analyzed and applied if possible to the corresponding job descriptions, the committee should attempt to evaluate the employee reactions. The committee as a whole cannot hope to discuss each suggestion for improvement, but generalities cannot be dismissed without further study. It is presumed that each member has studied the comments regarding the job descriptions which he has written. The chairman should ask that each member list some of the typical comments on the jobs he has described. In the discussion that naturally follows the committee should approach all employee comments honestly and make a real effort to profit by the suggestions received. Some of the criticism will be meaningless and other returns will center around grievances of long standing. That type of employee return is easily screened out and set aside.

Some of the typical direct or implied suggestions will fall into the following general groups:

1. Description approved, but employee claims that he possesses some unused skills that are not specifically mentioned.
2. The examples of typical work mentioned are not representative of the job.
3. The language of the job description is not understood.
4. Single-skill job description was received but the employee claims he is doing a combination job.
5. The job description is too short as compared with some of the other job descriptions that the employee has read.
6. The description does not correspond to the answers stated by the employee in the questionnaire.

7. The employee objects to the omission of adjectives in the descriptions of his job.

8. Classification A and B job descriptions are not sufficiently different to justify two job descriptions.

9. Job description is inaccurate.

Second in importance only to the actual evaluation work is the process of final correction and the writing of the analysis of job requirements and conditions. At such a time attention should be focused on details which could not be specifically stated in the body of the job description. The committee as a whole will readily determine in the final analysis of evaluation the degree of severity, physical or mental, of the job, the level of skill required by it, and the kind of conditions under which it is carried on. The important thing is to have a starting place. As a matter of fact, it has been found that after a little experience the majority of job analysts can write the analysis sections so accurately that any errors can be treated as exceptions.

Some persons would ask why it is necessary to write an analysis of job requirements and conditions, when the statements in the job description would seem to be the same thing. The answer to such a question is plainly seen during the evaluation processes, when one characteristic is evaluated for all jobs. The breakdown or analysis makes it possible to locate instantly the data desired, and the reader is not forced to read through the entire body of the job description. As evaluation proceeds there are frequent occasions for comparisons of characteristic values which had previously been established. In the administrative phases of job evaluation, employees will always challenge the total point-value of the job, but single out one characteristic for comparison, which is as it should be. The analysis of each job must, therefore, provide the correct data in the proper place, where such data can be checked without loss of time. (See Figure 30.) Aside from all other reasons that may be advanced for the desirability of breaking down a job description into an analysis of job requirements and conditions, there is an

OHIO IRON AND CARBON-STEEL CORPORATION		Job Description	
Ohio	Works	Job Title	<u>Truck Driver</u>
Auto, Truck, Tractor Dept.		Alt. Title	
3-1-42	Date	Wage Code	
Primary Function:			
Operate 1-1/2 to 2 ton gasoline driven truck to haul material for the electrical department			
Working Procedure:			
<p>Supervised by: Truck Foreman</p> <p>Receives dispatching orders throughout the turn listing materials to be hauled, pick-up points, and destinations. Follows these orders giving priority to ones labeled "Rush".</p> <p>Hauls equipment for the electrical department, such as motors, armatures, crane parts, switchboards, bearings, scrap, steel, copper, etc. Hauls line materials for the line shop and miscellaneous freight from the plant to the city. Picks up packages from city stores. New material is usually boxed or shielded; other equipment is unprotected. Used tarpaulin to cover material in bad weather.</p> <p>Manually loads and unloads truck unaided, unless material is heavy enough to make use of crane or helper necessary. Performs crane hooking occasionally. May overload truck approximately 100% of rated capacity.</p> <p>Obtains truck from garage at the start of each turn and returns it at the end of turn. Checks brakes, lights, water, oil, fuel supply, and tire pressure before starting out on run and reports trouble to the foreman. Changes tires occasionally when mechanic is not available. During travel obeys safety regulations and operates at a reasonable speed both in and out of the plant.</p>			
Equipment used:			
1-1/2 to 2 ton truck (#22). Chauffeur's license is furnished by the company.			
Individual Qualifications		Promotional Possibilities	
Sex: <input type="checkbox"/> Male <input checked="" type="checkbox"/> Female	Color: <input type="checkbox"/> White <input checked="" type="checkbox"/> Colored <input type="checkbox"/> No pref.	Immediate _____	
Nationality: <input type="checkbox"/> American <input checked="" type="checkbox"/> Other _____		And/or _____	
Height: _____	Weight req'd: <input type="checkbox"/> Light <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Heavy		
English: <input checked="" type="checkbox"/> Speak <input type="checkbox"/> Read <input type="checkbox"/> Write	Age: _____ yrs. to _____ yrs.	Rate Data	
Grade: _____	Education: Tech. _____ High. _____ Univ. _____	Method of payment: <input type="checkbox"/> Salary <input type="checkbox"/> Day <input type="checkbox"/> Hourly <input type="checkbox"/> Piece work <input type="checkbox"/> Bonus Hours of employment: _____ per week <input type="checkbox"/> Day <input type="checkbox"/> Night <input type="checkbox"/> Shift	

Figure 30. Job description with minimum of individual qualifications.

important mechanical reason. It is impossible to evaluate clearly a job description that has been written in narrative form. Somewhere in any systematic description there must be a listing of job requirements which can easily be compared with each other.

Final Approvals

Each of the committee members has developed, corrected, and edited the job descriptions which were assigned to him. Up to this time there has been no formal approval of the job descriptions by the committee as a whole. During the editing period members may exchange job descriptions which they have written. This action not only instills confidence in each individual, but it acts as a final check to enforce uniform quality of all job descriptions. The job descriptions as finally approved by the committee need not be passed out for employee approval. There will be many more changes made which at that time cannot be foreseen. There should be no harm in the committee offering to submit descriptions for inspection to any interested persons. The real measure of final approval can only be obtained after the descriptions have been subjected to the test of evaluation. It has been previously stated that if a job's requirements can be defined exactly, then the job can be evaluated. The corollary would be that a part of the requirements of the job cannot be evaluated unless the job description of that part is correspondingly clear.

8. SELECTION AND EVALUATION OF KEY-LIST JOBS

Purpose of the Key-List

UP TO THIS POINT the evaluation program has been developed along purely theoretical lines. The selection and sub-divisions of work characteristics, the forms utilized, and even the structure of the committee organization have been confined to the design tables. The mechanisms have not been tried as yet, and the committee has concentrated its efforts on what was thought would work successfully. In an art such as music, it is possible to write compositions which embody all of the well-established rules of harmony, melody, and expression without actually playing the composition on some musical instrument. A composer following this procedure may have spent years in learning the art (besides possessing his share of that not-easily-defined quality of talent), and the results are more or less a known quantity. By the same token, an architect has to be familiar with proved equations and formulas properly to determine the sizes of the cross-members which make roof trusses. The roofs must be safe under varying conditions of snow-loads. The architect can visualize certain conditions which have been proved in the past, and, having advance knowledge of what to expect, he provides for certain safety factors. He knows, prior to the time the roof is built, that it will be strong enough, safe, and serve the purpose for which it was designed. Unfortunately the art, science, or methodology involved in designing wage structures is relatively new and case data of past constructions have in most instances been neglected. In any orderly approach to wage determination there is a point at which the theoretical must give way to the actual and practical. Usually, there is no group of persons more anxious to test the evaluation program

than the job evaluation committee itself. The committee has spent long hours in developing the initial stages and it is but natural that they would be extremely curious to observe at first hand the degree of workability of their plan.

Many evaluation committees have included key-list evaluations in their plans because they thought it was the proper thing to do. It is the author's belief that the majority of these groups have failed entirely to grasp the real meanings behind and the primary purposes of key-lists. Too many committees have laboriously finished the preliminary work only to rush into key-list evaluation, construct a temporary wage structure, and compare the results obtained with the existing rates. Such a procedure cannot be considered as rational in any sense. The real utility of a key-list evaluation is in its ability to test out how the evaluation manual will work, and at the same time to determine whether the members of the committee individually and collectively have been sufficiently educated in its proper use. Trial under actual conditions is the only method of testing the manual for it is not always possible to predetermine the quality of the manual or the ability of the committee.

Selection of Key-List Jobs

The first step in selecting jobs for inclusion in the key-list consists of dividing the plant into major divisions which are representative of the type of work being performed. For example:

Assembly	Plating
Bakelite	Receiving
Finishing	Shipping
Foundry	Stock room
Inspection	Testing
Machine shop	Tool room
Maintenance	Woodworking

First, representative jobs must be chosen with care so that a cross section of all the work will be formed that is truly repre-

sentative of the plant as a whole. Jobs chosen from each of the major divisions will usually test different characteristics. Foundry jobs will test the weightings of physical effort and working conditions, while jobs selected from the tool room and skilled machine operations will prove an adequate test of manual skill, mental skill, and accuracy.

Second, the committee must decide how many key-list jobs should be included in the key-list. No advice can be given on this point as no rules or precedents have been established for it. However, no key-list should contain fewer than ten jobs. To select a lesser number would not constitute a proper test. Fifteen or twenty jobs should be considered the maximum number; evaluation of more than that number of jobs usually invites trouble, as there will not be more than twenty jobs with which all members of the committee are well acquainted. Key-list evaluations must be considered as only another step in the instruction sequence of the program. Any attempt to present the evaluators with more instruction than they can reasonably assimilate involves an unjustified risk.

Having determined the number of jobs and the major divisions from which they would be selected, all that remains is the actual designation of the jobs. The test would be unfair if it placed the manual on trial against jobs that were little known to the committee members. Such a practice would be just as ridiculous as if a textile-plant committee were asked to evaluate jobs which had been written for packing-house operations. To illustrate what a typical selection of key-list jobs might be, the following have been selected as fairly representative of a small plant which manufactures farm implements. The total number of jobs evaluated was 256:

JOB CLASSIFICATION	PLANT DIVISION
1. Assembler B	Assembly
2. Core maker B	Foundry
3. Drill press operator A	Machine shop
4. Inspector A	Inspection
5. Janitor	Buildings and grounds

JOB CLASSIFICATION	PLANT DIVISION
6. Millwright A	Maintenance
7. Plating racker	Plating room
8. Punch press operator C	Machine shop
9. Solderer A	Assembly
10. Spray painter A	Finishing
11. Squeezer molder A	Foundry
12. Tool maker A	Tool room
13. Trucker	Internal transportation
14. Turret lathe operator A	Machine shop
15. Wrapper	Shipping
16. Yard laborer	Buildings and grounds

Preparation for Evaluation of Key-List

Once selections of key-list jobs have been completed, it is important that each member of the committee refresh his memory of job content by actually visiting each of the jobs. There is too much at stake to risk having any radical differences of opinion at a time of manual testing. A distinct psychological advantage is gained if as a result of the first key-list evaluation there are no wide discrepancies requiring extended committee compromises.

If the key-list evaluations show wide variations, the committee can not help but feel that something is wrong with the "measuring stick." Such reactions can be avoided if most of the precautionary preparations have been made. It is often possible to trace adverse results to the fact that committee members have not fully informed themselves about key-list jobs. Hazy or false concepts and plain ignorance of job content do not, of course, permit true evaluation. The person responsible for the guidance and the instruction of the job evaluation committee should be especially alert to recognize and suppress in the initial stages any clashes of personalities. The first evaluation will usually fan into flame all smoldering fires of personal likes and dislikes. Such conditions are not always to be found, but to be forewarned is to be forearmed. It is assumed that the committee has been amply trained in all phases of job evaluation work, but, nevertheless, some

members may go on the defensive regarding their own jobs, and reason take wings when the question of relative job values is reached. To guard against this too-delicate situation, the jobs of committee members should not be included in the key-list to be evaluated.

Key-List Evaluation

Each committee member should be supplied with job descriptions arranged in order and stapled together so as to maintain that order. Loose sheets which get disarranged confuse the committee and detract attention from the job under discussion. Evaluation forms should be made available to all members so that each man can record for himself the point values for the characteristic or sub-characteristic. The leader or the chairman should start the actual evaluation by reading aloud the definition of the characteristic being measured in each of the key-list jobs. One of the fundamental rules of evaluation work is that all evaluations or comparisons should be judged by but one characteristic at a time. If the key-list contains fifteen jobs, and the first characteristic to be evaluated is "experience and training required," then all fifteen of the jobs must be evaluated on that characteristic alone before preceding to the next characteristic. Point values which are agreed upon by the committee are recorded on the evaluation sheet in the space allotted, and the same procedure followed until the last job is evaluated on the last characteristic. The student of job evaluation should readily see why this approach is made. If one job were to be progressively evaluated on all characteristics, total job values would become established without benefit of true comparison. When committee members let prior concepts of a job's total value supplant their better judgment their actions merely demonstrate the power of personal influences and motivations. Evaluation to completion of one job at a time forces individuals to press for points in accordance with

their own concepts. Relative values established in this fashion are worthless.

The average person is unable to change his thinking about and understanding of the intent and meaning of one characteristic to that of another fast enough to permit the group to work as a committee. This is perhaps the best argument against evaluation of a job to completion. Even were the individual members of the committee able to co-ordinate their thinking using this method, the evaluations would not reflect the benefits of comparisons. The personal interests of the evaluators will also vary. It is not difficult to visualize the lack of interest of a woodworker during the evaluation of tool-room jobs. For first-hand experience the committee might even try to evaluate the key-list jobs by evaluating individually each job to completion. There is no better method than this to impress upon the committee once and for all time the futility of this type of evaluation. Such an experience will usually place the committee in a position to deny, politely but firmly, the demands of those who would seek to have all jobs in a certain department or division evaluated. All that has been said about the disadvantages of evaluating single jobs to completion pertains equally to the practice of evaluating all jobs in one department to completion.

Evaluation by characteristic is, therefore, the only impartial and rational approach to the task. No one person or group can possibly know the values of the jobs until the last characteristic of the last job has been measured. Good job evaluation practice does not stop with one evaluation of the key-list. The chairman should collect the recording sheets of the evaluators when the first evaluation of the key-list is completed. A second evaluation of the key-list should be made not sooner than two days after the first attempt. If the second evaluation shows results that are similar to the first, the committee may then assume that in all probability the job evaluation manual will work. In some cases, the third evaluation of the key-list may be asked for in order to make certain that the second test was not merely accidental. If a committee can

evaluate a key-list of jobs three times without recourse to previous records of past evaluations, and attain uniform results, then it can be reasonably assumed that the manual, as designed, permits uniform interpretation.

Checking the Key-List Evaluations

When all key-list jobs have been evaluated, they should be arranged in order of ascending point values. Discussions regarding the ranking of the jobs should be encouraged, even to the extent of asking members of the committee whether the evaluated results agree or disagree with their former concepts of the jobs. Point ranges established for each of the characteristics should be scrutinized to determine if the full range of points has been used, and, if not, why not. If the ranges have not been fully used the original weightings will be found to be out of balance. For example, in the characteristic "skill," which was originally set up so as to enable the committee to spend from 0 to 300 points out of a total of 1000 points, it is discovered that the maximum of points used was 150. Such a key-list evaluation then changes the weighting of skill from 30 per cent to but 15 per cent, which over or underweights some factors and control of the evaluation program is lost.

Generally speaking, all of the ranges should be utilized in evaluations of key-lists. If they have not been used, the trouble usually can be attributed to poor selection of key-list jobs or poor evaluation on the part of the committee.

Checking Characteristics by Point Values

An easy method of checking key-list evaluations is to set up arrangements of job rankings on individual sheets devoted to one characteristic only. This is, of course, merely a repetition of the evaluation method, but, by the addition of a few lines drawn between the jobs and job values, a visual check will confirm or disprove the original evaluations. Such

RANKING OF JOBS FOR FACTOR "SURROUNDINGS" (0 - 11 POINTS)

JOB	JOB NAME	CODE	POINTS
15	Experimental coil winder B	A	5
185	Cabinet maker (maintenance)	A	5
16-C	Coil winder B (production)	A	5
380	Radio Technician	A	5
128	Castings inspector, A (layout)	A	5
355-B	Experimental motor builder B	A	5
321	Motor balancer, hand, A	A	5
271	Gauge repairman	A	5
168	Locksmith A	A	5
355-A	Experimental motor builder A	A	5
185	Sign painter	A	5
277	Dial indicator gauge repairman	A	5
14	Experimental coil winder A	A	5
336-W	Analyser and adjuster (gyro-horizon)	A	5
16-B	Coil winder A (production)	A	5
228	Brush painter B	A	6
147	Internal transportation or receiving dispatcher	A	6
242-A	Warehouse man	A	6
374-B	Test operator B	A	6
375-B	Basing and finishing operator B	A	6
371-B	Shell assembler B	A	6
372-B	Cathode assembler B	A	6
252	Box maker	A	6

Figure 31. Cross-check evaluation list.

Figure 32. Cross-check evaluation list.

CHARACTERISTIC: EXPERIENCE AND TRAINING

POINTS	
Foundry laborer	0- 5
Plating room laborer	
Shake-out man	
Thread grinder operator	
Bench assembler (repetitive)	
Sprue cutter	
Oven tender	
Final assembler (repetitive)	6- 10
Degreaser operator	
Snag grinder, brass	
Drill press operator (repetitive)	
Honing man	
Lapping machine operator, plates	
Turret lathe operator	11- 15
Hand mill and setup man	
Surface grinder and setup man	
Centerless grinder	16- 20
Engine lathe and setup man	25- 30
Final assembler (complex)	35- 40
Turret lathe and setup man	
Inspector A	60- 70
Tool maker A	80- 90
Pattern maker A	90- 95
Model maker, experimental shop	95-100

a check list is given in Figures 31 and 32 or might be jotted down as in the table.

Correcting Characteristic Weightings

If the committee cannot determine reasonably true comparative values after repeated evaluations of the key-list jobs, the weightings of the characteristics should be checked. In many such instances the committee probably did not have access to sufficient job evaluation plans to prevent excessive weights being assigned to certain characteristics. The committee should also recheck again the points it assigned to the step definitions and the actual construction of the phraseology. If the trouble is not detected after examination of these items it is recommended that the committee consult with some fully experienced evaluation engineer, who should be able to apply corrective measures to the program.

Use of the Job Evaluation Manual

Having proved that the manual is workable, and that the committee is thoroughly familiar with its use, the remaining jobs must be evaluated. These evaluations will of necessity be tied in with the bench marks that were established during the key-list evaluations. If the marks established were proper, the remaining work should prove easy and interesting. Well-established bench marks will also hasten to conclusion the task of evaluating the main body of jobs. Multiple evaluations of the key-list have proved that the committee is able to evaluate steadily with uniform tolerances. A committee may evaluate on either the low side or the high side of the values set up in the step definitions. It is immaterial which avenue is taken, so long as it continues to evaluate in the same manner. The committee cannot be niggardly in allotting points during one session, and freely assign points for the same characteristic in the following session. The recording secretary of the committee should

be alert to detect such behavior, and firmly insist that the members, to correct their evaluation technique, should review the key-list jobs.

It would be beneficial to recess the committee for several days before actually starting on the main task of evaluation. Almost always the committee is composed of men who have important work concerning their regular jobs to be done. Give these persons a chance to get back to their desks for a few days and dispose of all accumulated business. The committee should start the actual evaluation of the major portion of jobs with a free mind. If committee members are given the opportunity to catch up on their regular work they will usually re-enter the evaluation process with a firm determination to get it done as quickly as possible and in a manner consistent with the quality demanded.

9. THE EVALUATION PROCESS

SATISFACTORY SELECTION AND EVALUATION of key-list jobs determines the degree of success the committee will achieve in the evaluation process. The success of the evaluation determines the usability of the entire evaluation program. During the preliminary evaluations there existed the possibility that the test jobs did not include any of the so-called "disputed jobs" which are always present in any evaluation work. If the disputed jobs did not show up then, some of the complexities of real job evaluation remain to be dealt with accordingly.

In all evaluation work the committee should again and again be told that at no point in the entire program should it consider itself as recording a final decision. Every committee will make mistakes, which in most instances are detected before the completion of the program. Often these possible mistakes become self-apparent and self-correcting. The committee must be responsible for correcting these errors. Detection of errors during the evaluation process is considerably easier than marking errors for later correction.

Need for Continuous Evaluation

All of the preceding committee work has been of such a nature that periodic job evaluation meetings could be held with no bad effects on the quality of the work. At first the plans were developed and a schedule was maintained as the work progressed through regular stages. Actual evaluation processes demand that the committee proceed as fast as is reasonably consistent with quality, and at a pace that accommodates the physical ability of the committee as a whole. This is the "home stretch," and under no circum-

stances should outside events or the wearing-down effects of long-drawn-out evaluation procedures be allowed to jeopardize the good work just completed. When a committee has successfully attuned its thinking to become capable of evaluating the part one characteristic plays in all the jobs, every effort must be made to hold captive such thinking. If the actual evaluation process can be condensed into a period of a few days, there is a greater chance of having the full participation of the entire committee. Management members of joint committees are sometimes prone to invent excuses to absent themselves from some of the sessions. This is especially true when they become aware of the tedious grind which confronts them in the evaluation of large numbers of jobs. To permit absenteeism at this point is to weaken the final results, as the absent member will miss part of the discussions and fail to obtain the benefits of group thinking. There is no way of making up absence during evaluation.

Evaluation-Time Estimates

In estimating the time necessary for evaluation alone, the time expended on key-list evaluations should be considered. The first attempt no doubt took considerable time, the second was probably quicker, and on the third the committee acted like veterans. In actual evaluation processes the committee invariably reduces the best times accomplished during key-list evaluations. In scheduling committee meetings it is safe to estimate that the average committee can evaluate seven and one-half jobs per hour over the entire listing. In making this estimate it is assumed that there are approximately twelve point determinations for each job to be made by committee action. If 350 jobs were to be evaluated the committee would have to plan on approximately 47 committee-hours. If evening sessions are held they will help to preserve continuity of purpose.

Evaluation of One Characteristic at a Time

The reasons advanced for evaluating one characteristic at a time as discussed in the previous chapter are just as applicable to the main evaluation process. Job evaluation is a comparative method of studying jobs to determine to what extent they are alike or to what extent they differ. The average mind is capable of making comparative measurements where the parts to be measured have been completely divided from each other. The same cannot be said of an individual attempting to make an intelligent appraisal of plural items of a complex nature. Men can not constantly shift their bases of comparison and at the same time develop appraisals which are of value and have some semblance of uniformity.

Which characteristic should the committee select for starting the evaluation? Experience has shown that it is always more practical to start with one of the more tangible characteristics. The key-list evaluation should have taught the committee that some characteristics easily lend themselves to evaluation, are free from argumentative pitfalls, and in general seem more tangible. Of necessity the evaluation of the first characteristic will bring to the attention of the committee certain unavoidable errors and discrepancies in the job descriptions. These errors should be detected while measuring with a characteristic of work that is fully understood, rather than allowing such errors to becloud the issues while measuring some of the more important characteristics. The following order of evaluation of characteristics has proved successful in practice:

1. Physical effort.
2. Experience and training.
3. Responsibility for safety of others.
4. Manual skill.
5. Responsibility for spoilage.
6. Mental skill.
7. Accuracy.

8. Schooling or equivalent.
9. Mental effort.
10. Responsibility for damage to machines and equipment.
11. Hazards.
12. Surroundings.
13. Connected expense.

Arrangements of Job Evaluation Order

Job descriptions can not be placed in just any order and evaluated. A prearranged order is vital to a well-executed plan. The formula for job dispersal is simple when one considers the reasons which necessitate a certain order. To permit the grouping of all jobs of one department might tend to draw away the interest of the committee from that department, and produce departmental comparisons dangerous to any evaluation program. The evaluation process flourishes on comparisons based upon different levels or degrees of the same characteristic. If all tool-room jobs were grouped the program would not permit comparisons of those jobs with jobs of considerably lesser skill which are not usually found in the tool room.

There are many good reasons for shuffling job descriptions prior to actual evaluation. Several mechanical methods which accomplish thorough mixing are:

1. **ALPHABETICAL ARRANGEMENT.** As all jobs in large industries have an official job name, it is easy to file these in alphabetical order for evaluation. Types of work, departments, and divisions are not subject to alphabetical arrangement, and the results would, therefore, be free of arbitrary groupings. The job of "laborer" might precede that of "lathe operator," and the jobs "packer" and "punch press operator" would also fit into respective order. There is one disadvantage to this method where jobs of multi-skills have been used. Where the job descriptions A, B, and C have been set up there is always a tendency of evaluating along definite percentages, even though the same relationships are not constant in all multi-skill jobs.

2. **MANUAL ARRANGEMENT.** Committee members often attempt to secure a complete shuffling of job descriptions by sorting all jobs according to major departments and divisions of the plant and then making up the order of evaluation by picking off one job description from each pile until such time as only one pile remains containing jobs in that department only. The sorter then manually interposes the remaining descriptions into the sequence which has been determined.

3. **SHUFFLING.** Probably the best results for obtaining a complete mixing of all job descriptions can be obtained by actually shuffling them in the same manner as one would a deck of cards. By this means a complete mixture of skills, types of work, departments, and divisions is obtained. Once the shuffling has been completed the secretary of the committee arranges to have the evaluators' books of job descriptions made up in the exact order as the shuffled set. The pages of all sets should then be numbered for ready reference.

Avoiding Committee Impasses

The chairman should at all times be quick to sense potential impasses, or any behavior of the committee which might lead to commitments from which there would be no retreat. If the committee has been properly schooled in job evaluation principles, its members will not permit themselves to be jockeyed into such positions as sometimes occur in orthodox labor negotiations. Where an impasse does occur it is usually the result of committee weariness. Recesses should be taken at regular intervals. Occasional refreshments such as coffee or cold drinks keep the committee alert. Should evaluation proceedings tend to slow up because of the inability of the committee to agree, the issue can be temporarily pigeonholed or attention focused on past evaluations to determine whether or not prior allocation of points was

agreeable to the disputants. Disagreements occasioned by specific jobs should in no case stop the evaluation work. Discussion of the disputed job should be shelved until evaluation of the characteristic has been completed. Impasses and threatened disruptions arise in all joint job evaluation committee work, but invariably dissolve when honest reasoning triumphs over personalities.

Evaluation Check List

After evaluation is under way the members of the committee will find that they need some device by which they can rapidly refer to prior evaluations. If the job being discussed happened to be "fireman, boiler house," someone might want to compare the proposed points with what the committee had already given "cupola tender," or some other job which was thought to bear some relationship to the job in question. If the job descriptions are not in alphabetical order, finding the reference will slow down the committee's progress. Even if the sheets were readily available the committee would not have the advantages of the check lists. A check list is made up as the evaluation proceeds, and the names of the jobs are written in prepared spaces which correspond to point values of the step definitions. There are many types of check lists, all of which are designed to give instant comparative data regarding points previously designated for job characteristics. The check list should be maintained by the secretary of the committee and, at the close of each evaluation session, should be edited and the evaluations of that session sorted into past evaluations at their proper places. Each of the committee members then becomes well supplied with comparative data, based on the committee's own determinations. This practice has proved to be one of the finest stabilizing factors of the entire evaluation process. An example of such a check list is shown in **Figure 33.**

CHECK LIST

CL-23

Characteristic: _____ Actual schooling _____

Job	Job Name	Code	Points	Job	Job Name	Code	Points
	0-10 Points			11-20 Points			
5	Assembler E	A	5	31	Polisher, cam, B	A	12
10	Electrical assembler E	A	5	65	Automatic tapper	B	13
20	Charwoman	A	5	163	Gardener B	B	13
17	Elevator operator, front	A	5	83	Serviceman, auto	B	16
22	Porter, shop	A	5	255	Packer A	B	20
23	Porter, office	A	5				
30	Polisher, cam, C	A	5				
21	Matron	A	8				
	21-30 Points			31-40 Points			
85	Chauffeur	B	25	182	Serviceman, pump	C	32
155	Beltman	B	25	160	Carpenter B	C	35
122	Inspector D	C	30	357	Punch press operator A	D	38
				268	Tool room grinder B	D	40

Figure 33. Evaluation check list.

Evaluation Forms

Each of the committee members should be provided with form sheets for recording characteristic evaluations. The secretary should arrange the listing of the jobs to correspond with the order in which the job descriptions are arranged. The spaces provided for recording should be large enough

to accommodate the code and the evaluation figures without crowding. (See Figure 34.) The secretary should maintain the official copy of evaluations, but it is expected that each of the members of the committee will keep his own copy. This requirement serves as a unifying influence, keeps each man alert, and assists to bring about participation. Frequently a member desires to refer to a past evaluation without taking up the time of the chairman; if he has kept a day-by-day record of evaluations he is able to find the same information for himself. Three examples of job evaluation rating sheets are given in Figures 35, 36, and 37.

Committee Participation

The evaluation process will be improved by assigning the leadership of evaluation sessions to various members of the committee. Each time a new chairman starts leading the evaluation of another characteristic of work, he should review the definitions of the characteristic and initiate the actual evaluation by reading aloud the first job name. By use of the job evaluation manual with its graduated scales he might then suggest a point evaluation for the job being discussed. The committee as a whole may not agree with the points suggested, but nevertheless the evaluation process has begun. There may be many differences of opinion, and the chairman should encourage a free and easy exchange of convictions.

Point evaluation programs always permit interpolation and delicate shadings of opinions, and nothing should be allowed to prevent exercising comparisons. In the initial evaluations it may be necessary to call upon each member of the committee for audible expressions of values and thereby determine a consensus. As the committee increases its skill in using the manual, both the leader and the committee will soon become aware of those points where the evaluations suggested receive unanimous support. As each job title is called, and a point value suggested, the leader will

Figure 34.

Evaluation Check List

Figure 35. Evaluation check sheet.

know if the suggested points are satisfactory. A workman using a ruler does not call a fellow worker to check that type of a measurement. The reading as determined by the

FORM 3 I.M.S.		JOB RATING SHEET	
PLANT JOB TITLE		PLANT NO.	
OCCUPATIONAL DICTIONARY TITLE		CODE NO.	
DEPT.		DEPT. NO.	
NO.	ATTRIBUTE TITLE	No. of Fats.	BASIS OF RATING
			1. PHYSICAL EFFORT
2. HAZARDS			
3. JOB CONDITIONS			
4. SUPERVISION			
5. RESPONSIBILITY FOR THE SAFETY OF OTHERS			
6. RESPONSIBILITY FOR EQUIP. AND MATERIAL			
7. KNOWLEDGE-EQUIP & TOOLS METHODS MATERIAL			
8. SCHOOLING			
9. JUDGMENT AND INITIATIVES			
10. MENTAL CAPABILITIES			
11. PHYSICAL SKILL			
TOTAL			
REMARKS:			

Figure 36.

scale is accepted. It should be noted that in citing the comparison a ruler has been mentioned instead of a micrometer. Job evaluation does not profess to be capable of measuring jobs in such precise fashion. Therefore, if the job eval-

ation manual is a good one, any person with average intelligence should be capable of measuring the various require-

JOB EVALUATION RATING SHEET		Rating _____
Job Title _____	Dept. _____	
Product _____		
Equipment _____		
Description of Job: _____		
Job Analyzed by _____ Date _____ Rated by _____ Date _____		
Analysis: Rate the Job - Not the Man _____ Factor and Rating _____ Base Points 10 _____		
		STRENGTH REQUIRED _____
		ENDURANCE REQUIRED _____
		ACCIDENT HAZARD _____
		COMFORT _____
		SUPERVISION RECEIVED _____

Figure 37.

ments of the jobs. In evaluation processes the leader usually assumes that silence on the part of the committee means approval. To evaluate by such a give-and-take attitude is

probably the most simple and effective manner of reaching an accord. The suggested technique can be reinforced from time to time by requests from the leader addressed to the members best qualified to give additional information.

Daily Orientation

Discussion of certain job features or other delaying events may make it impossible to adhere to strict schedules. This leads to the possibility of the committee not being able to evaluate all jobs on one characteristic during one session, even though the advantages of such action are well known. Where breaks in schedule occur, it is advisable to orient the committee at the start of the following session. The purpose of such orientation is to recall all the highlights of the preceding session and if possible to review briefly some of the evaluations that were determined then. This review, which should not take more than ten or fifteen minutes, has been found to recondition an adjourned session to the same point of thinking as existed before the session adjourned.

Effect of Outside Events on Committee Action

Committee action can be as variable as the weather. Social psychologists have searched for the causes of this phenomenon, but they have met with little success. Almost everyone is familiar with those occasions when the boss is in a good humor and everything seems to be going well. At other times nothing seems to meet with his approval, and those who are fortunate enough to be able to do so, seek the remote corners of the plant to avoid contact with him while he continues in that frame of mind. Committees also are subject to the whims of its members, and, as such, committees may be said to reflect a personality.

Outside events such as production meetings, inventory problems, departmental reorganizations, and change of com-

pany policy have often been the cause of changed attitudes on the part of management representatives who found it almost impossible to concentrate on the evaluation process. Outside union meetings have been known to agitate the union representatives of the committee to such an extent that it would be foolish to continue until the thinking of those men was again stabilized. National events, weather conditions, labor legislation, and hundreds of other influences have taken their toll in producing negative committee action. Not all of the outside influences are as readily discernible as the ones mentioned, but the important thing to remember is that they do exist at times. When the committee work is influenced to such an extent that rational thinking is impossible it should be the responsibility of someone to call a spade a spade. The situation should then be frankly discussed, and if the obstructing influences can not be removed the committee should recess till better conditions are present.

Committee Tension

All committees should be forewarned regarding the possibility of internal dissension. Numerous occasions will occur which will provide opportunities for members to take sides, or for alliances to spring up which at the outset are of course unpredictable. Sharp words may result which can be traced to differences of long standing. Often even the most trivial expression or action causes an explosion which might well jeopardize a committee's best intentions. Personalities usually cause committee tension, for rarely do discussions of job values create emotional disturbances. The chairman, whoever he may be at the time, must learn to recognize these quirks of human nature, and break the rising tension by every means at his disposal. Often this can be effected by recessing, by the telling of a story, or by a review of the work which is still to be accomplished. Committee tension usually subsides as quickly as it is generated unless long

hours of continuous work have undermined the good nature of the committee. Allowances must be made for individuals who may be under domestic strain, or as a consequence of financial difficulties are actually ill.

Every committee realizes that the members have a real job to do. Were the committee to break up because of its inability to reach agreement, then its members could scarcely hope to keep the respect and confidence of those whom they were nominated to represent.

Name Elimination

True evaluation means that the committee members must concentrate on the requirements of the job. Consideration of and even associated reference to the individuals actually performing the work being discussed should be avoided. When a specific job is mentioned a tendency sometimes exists to associate the job with the name of a person. For example, "crane operator" is mentioned, and the novice evaluator might say, "You know him, John Smith—that fellow with one eye." Such an injection of extraneous thought temporarily disturbs the thinking of those who might have been honestly trying to measure a certain requirement of the job. Instead, some of the committee try to envision John Smith, complete with eye shield and other unrelated facts. Aside from the fact that this personal identification detracts from committee thinking, it also consumes endless minutes of valuable time. Sooner or later the committee will see the wisdom of divorcing all personal references from evaluation work. It is the job that is to be evaluated and not the man on the job.

Applying Corrections

After all jobs have been evaluated, it is always necessary to check the inconsistencies which creep into the evaluations and apply corrections. The secretary's check list is the most

valuable aid in checking by means of visual comparison. Since each of the committee members also has a copy of the check list, he can make recommendations (before the total points on each job are tabulated) for review and adjustment of point values. This preliminary checking must be done by comparisons of point values by characteristics, for otherwise pressures are brought to bear on the committee simply because one job is found to have more points than another of seemingly greater value. In short, the checking of total points for a job against past concepts of that job's worth is not really a check at all. When legitimate causes exist for changing point evaluations, the changes must be made in an orderly manner. The law of averages usually works fairly well in errors in evaluation. There are about as many errors on the high side as on the low side. It is an unusual evaluation which results in all errors being made in one direction. It is, therefore, reasonable to assume that there is a counter-error for each overevaluated factor. To reduce this process of correction to its simplest form, each of the parties concerned should then submit, in writing, a list of names of those jobs which are incorrect. It is not sufficient merely to state: "This job is too low." Or: "These jobs are overevaluated." Each questionable job should be listed on a separate piece of paper with its job number, job name, evaluation by each characteristic, and total points. The proposed changes and the reasons for the changes should be listed in corresponding order. Only when this method is applied will the committee be able to make corrections in a systematic manner. To make corrections unsystematically usually destroys pre-existing relationships which were basically sound.

Recessing the Committee

When the committee has reached complete agreement on all job values, the work of the joint job evaluation committee is finished. From that point on, the determination of

wages is a matter of negotiation. The committee should not be disbanded, for that would imply that there was no plan for the continuity of job evaluation processes. Jobs change, old jobs are combined with other jobs, and new jobs are constantly being created in the usual manufacturing plant. No job content remains forever static. The same authority that named the committee and authorized its functioning should acknowledge the completion of the work, and publicly thank all members for their efforts in completing successfully a tedious and exacting program. The committee should then be recessed.

Before recessing, the committee should outline a schedule and procedure for the continuing operations. A permanent chairman should be elected to act in the interim. Job evaluation is too new a process for anyone to assume that all the questions which will arise have been foreseen. During the course of the work the committee members have enjoyed increased prestige in the eyes of their associates, and good employee relations are not fostered by suddenly sending a man back to the bench. Committee members may have enjoyed the evaluation work, the clean surroundings, and a taste of "office work." Some of these men may dislike the prospects of returning suddenly to the physically hard work and rougher working conditions of the shop. This transition period should not take too long to complete, however. After the committee has been recessed, a few meetings for the purpose of outlining the functions of the continuing committee will usually solve the back-to-work question.

10. EMPLOYEE CLASSIFICATION

Purpose of Classification

JOB EVALUATION DISCUSSIONS always place emphasis on the fact that the job is to be evaluated and not the man on the job. This is correct, but there comes a time when the mechanics of the evaluation processes have been completed and it becomes necessary to adjust existing wage rates with the newly determined wage rates. This adjustment process involves employees. Classification of employees is simply the slotting or fitting of current personnel into those jobs coming under the scope of the evaluation program. Employee classification is a pigeonholing process. If 4500 employees are involved, and the list of acknowledged jobs totals 250, it means that the ability of each of the 4500 employees must be scrutinized by those responsible for the classification process. In the evaluation process the committee has determined which jobs were representative of the unit covered, has written job descriptions, and has evaluated every type of job. Classification matches the employee's abilities with the job requirements and the job titles. Correct evaluations and properly determined wage rates would be worthless if it were not known to whom the rates and job descriptions would apply. Employee classifications change when an employee is transferred to another type of work. Sometimes company supervisors misunderstand the true meaning of change in job content and try to operate on a literal interpretation of the word *transfer*. When an employee's work changes, regardless of an actual transfer from one location to another, a change in classification is in order. The question of how long a person must work on the new job before the classification affecting the rate is changed is usually a matter of negotiation, or is deter-

mined by the company. Sometimes an employee is asked to do work for a short period of time in another classification which has an evaluated rate higher than the rate in which he is classified, or to do work at a lower evaluated rate that involves considerably less skill. From a payroll point of view it is impractical to make changes for short periods. The employee, furthermore, may be confused and unable to determine what his earnings will amount to. However, labor and management are not in agreement on this point, as labor believes that an employee should receive immediately the added financial benefits from higher rated work, and that when an employee is transferred to a job paying lower wages, he should be allowed to retain the higher rate of his former classification. This principle is illustrated in the words of a labor organization pamphlet: *

Allegedly it is the job which is rated, not the man. For instance, it is common practice for companies to hire a highly skilled man, place him on work beneath his skill, and thus justify hiring him at a lower wage. "If we hired the President of the United States for a porter's job we couldn't pay him more than porter's wages," the company argues. "If you hired the President of the United States you wouldn't keep him on porter's work very long," the union retorts. And so it is with the worker hired beneath his skill. The company soon makes the best possible use of his services.

The union contends that a first-class operator should receive the wages of a first-class man, and not be paid less simply because all of his skills are not being utilized on the immediate job. If the president of the company were to spend a day's time on a routine clerical job, he would never for a minute agree that he should receive less pay for that day. He would insist, and, we think, correctly, that he is paid on the basis that his talents are available to the company whenever they are needed. Employees should be paid on the same basis.

Timing of Employee Classification

Timing of the various phases of job evaluation is of the utmost importance and is especially important in employee

* United Electrical, Radio, and Machine Workers of America, C.I.O.: *The U.E. Guide to Wage-Payment Plans, Time Study, and Job Evaluation*, New York, Arlen Associates, 1943.

classification. Let the problem be studied objectively. First, employees cannot be classified until satisfactory job descriptions have been prepared which are acceptable to everyone concerned. This may have been accomplished by the committee distributing job descriptions to the employees prior to the time that actual evaluation work was done. In considering the problem of timing, it is assumed that it is desirable for the supervisors and the stewards to audit the job descriptions. Not until this point has been reached should the classification or reclassification of employees be considered. Second, the problem then resolves itself into whether the employees should be classified before or after the evaluation of jobs. There are few if any advantages in reclassification following the evaluation process as compared with the many advantages of classification prior to evaluation. The main advantages of classifying prior to evaluation are:

1. **SAVING OF TIME.** During the job evaluation and wage conversion processes the classification work can be done. This materially shortens the time element for the entire program.

2. **IMPROVED CLASSIFICATION.** Since classification is simply identifying employees with job descriptions, better classification will result if the money angle is avoided. Money values of jobs cannot help but influence those responsible for proper classification procedures. If each job does not have a price tag on it, the process is considerably simplified. When a man is fitted to a ready-made suit he seldom fails to look at the price tag on the sleeve. Were it possible to eliminate the price tag during the fitting process men would generally be better dressed. By the same token, in the past, too much emphasis has been placed on the rate for a job rather than on matching the job requirements to an employee's ability or skill. There are arguments for both sides of the issue, but in the long run better classifications result when the job price tags or rates are unknown.

3. BETTER EMPLOYEE UNDERSTANDING. If employees are classified at the earliest practical time, employee education has been advanced and installation of the program hastened. The classification process is a small but necessary part of job evaluation education. Education of employees to this phase of the program will be easier if it is done before the jobs have been evaluated and priced. Too many employees may have had false hopes destroyed in the evaluation process and, therefore, may later decide to have nothing to do with co-operating in the installation.

Joint Classification of Employees

There are many ways of classifying employees, all of them dependent upon the policies, labor organization, geographical location, participating personnel, and ideas of the job evaluation committee of the company concerned. For the purpose of this discussion a model set of instructions and procedures to guide classification committees and sub-committees (should they be necessary) has been selected to detail the process. In the procedures and instructions, it is assumed, first, that the company and the union have agreed to the joint classification of all employees prior to the evaluation of the jobs. To make the example cover the most complex conditions it is also assumed, second, that multiple plants exist, which would require the issuance of standard instructions to all plant classification committees. Third, it is assumed that the company is of such size as to require sub-classification committees. The final assumption means that the departments of each plant are so large and numerous that no one committee would have intimate knowledge of the work done by each employee. In order to expedite classification, instructions should be issued to all committees in either dittoed or mimeographed form, or, if the company is large, they should be printed in handbook form. Instructions for the classification of employees should never be given verbally. Inasmuch as employee classification is a

phase of the job evaluation program, the total responsibility for the resultant classification must be assumed by the job evaluation committee. That responsibility should be clarified at the start of the work. In smaller plants where the evaluation committee is conversant with all jobs and the people on the jobs the committee might assist in the classification work.

If an explanation of the classification process is outlined to the employees, a favorable reaction may be expected. An example of this type of publicity in diagram form is shown in Figure 38.

Form of Instructions for Employee Classification

A model set of instructions and procedures for classifying employees is given here.

EMPLOYEE CLASSIFICATION

Before completion of the job evaluation process, it becomes necessary to classify all employees. The classification of employees is carried out by:

- The foreman and the shop steward, or
- The plant classification committee, or
- The agreed-upon arbitrator.

The machinery for classification has been so designed that employees will be classified by the individuals best suited to do the job. Therefore, classifications are made by the respective foremen and shop stewards. After having read all of the job descriptions furnished them for the department, each foreman and shop steward prepares a list containing the name of each employee followed by the job classification into which, in his opinion, the job of that employee falls. The two lists are then compared, name by name, and, when both agree concerning a classification, that classification becomes official.

Where foreman and shop steward disagree, the name of the employee is submitted to the plant classification committee, composed of two members representing management in the plant and two members representing the union in the plant. The decision of the committee establishes the official classification of the employee.

In the event the plant classification committee fails to agree, the name of the employee is submitted to the arbitrator, who will classify the employee in accordance with his best judgment.

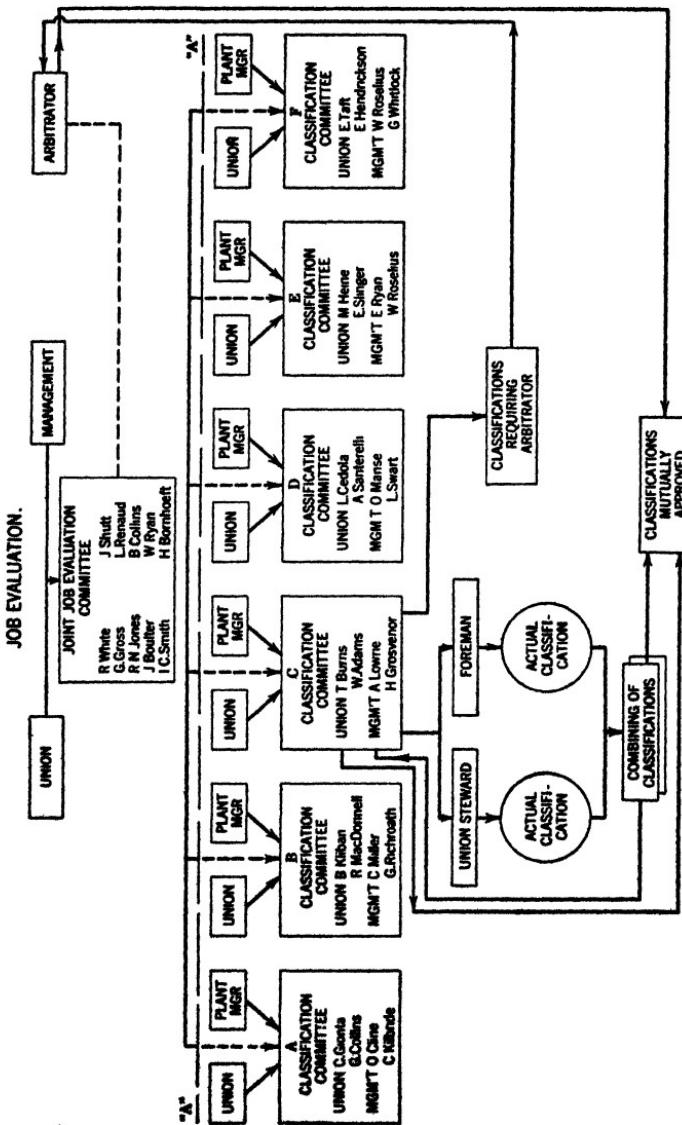


Figure 38. Employee classification procedure for multiple plant operations.

INTRODUCTION TO INSTRUCTIONS AND PROCEDURES FOR COMMITTEES

Purpose. The purpose of this manual is to explain:

1. The material that you will work with.
2. Instructions on how to reclassify an employee.
3. The method by which you will record the new classifications.

Coverage. All hourly employees in the bargaining unit of Local _____ will be reclassified with the exception of apprentices.

The Material That You Will Work With. Each committee member will be furnished with the following material to assist in properly classifying employees:

1. A copy of the various job descriptions that will be needed by you to classify the employees you are responsible for.
2. Occupational code sheets which list the occupations and classifications and designate the code numbers to be used.
3. A list of all employees to be considered for classification. This list should contain the employee's department number, clock number, name, present occupation, and space for entry of employee's "classification of current duties." As you proceed to study the manual you will find how the listed material is to be used in your work.

INSTRUCTIONS ON HOW TO RECLASSIFY AN EMPLOYEE

Under the reclassification program we are undertaking, there are approximately _____ job titles which will cover more than _____ hourly-rated employees. It is obviously impossible to include in the job descriptions every movement each employee makes. If every move were to be described, our job titles or classifications would increase many times over because of minor differences between employees' duties. Further, many jobs change in content from day to day as the requirements and specifications of production change. However, each job does have major requirements which remain constant, and it is possible to include in a job description the major duties and requirements of a classification. Each employee will receive a classification. This classification will be determined by the present job duties the employee is required to perform, and will be termed the "classification of current duties."

An employee with three months or less service with the company will be classified within his present occupation, but the code number assigned to him will signify that he is a "probationary employee." Also, an employee who, at the time of classification, is in an occupation to which he has been newly transferred from a different occupation, will be classified within his present occupation but will be assigned a code num-

ber which will signify that, in effect, he is on trial to the extent that he has not been long enough on the job for his qualifications to be fully determined. Employees who have had more than three months' service with the company, but do not qualify for the lowest classification within their occupation, will be assigned a code number that indicates this fact.

Complete instructions on the use of code numbers as related to the preceding paragraph will be found in the last pages of this manual under the heading: "Instructions On the Use of the Occupational Code."

In reclassifying an employee, all committee members should bear in mind that the employee is being reclassified according to the skill and versatility required of him in performing his regular duties. The classification is determined by the duties of the job and the skill required of the employee to do the job actually performed, rather than any individual skill the employee may possess but not use. Care must be exercised in interpreting this statement. For example:

John Doe receives X classification because he is skilled and versatile and can do a large variety of work within his department and is *called upon to do such work from time to time*. During the time of reclassification, Jim Hoffman, performing a similar operation, is working next to John Doe. However, Jim Hoffman is called on to do only a limited part of the work and does not possess the versatility and skill that John Doe possesses and hence should not receive as high a classification. Conversely, the fact that at time of classification John Doe is doing the same work as Jim Hoffman does not mean that John Doe should be given as low a classification as Jim Hoffman.

With this thought in mind and before undertaking to assign an employee to a specific classification, there are, in addition to duties and requirements, five factors which need clarification. You will find that some of these factors are definitely individual characteristics of the employee and are only associated with the merit rating of an employee, that is, they are personal qualities which determine how high up in the merit band an employee stands within any given job classification. A detailed description of each of these five factors is presented to show to what extent they should enter into the classification of the employee:

1. Quality of the Work

The quality of work which an employee turns out is considered in classifying an employee only to the extent of the requirements for tolerance, finish, and operating characteristics as outlined in the job description.

2. Quantity of Work

The amount of work turned out by an employee is a characteristic of the individual, and is considered only in rating the merit of the em-

ployee. Thus quantity of work is not a consideration in classifying an employee.

3. *Versatility*

The ability of an employee to perform a variety of operations which require more than one type of developed skill is called versatility on the job, or within the department. Examples of conditions to be considered are:

A. The work now being performed by the employee is a short-term (one- or two-week) assignment due to a slowing down of his regular work for a short period, or the work now being performed is assigned by the foreman for the convenience of the company to complete a "Rush" order. The employee classified under these conditions should be classified in the job which describes his regular work *unless* the added work is of a definitely higher caliber and requires a higher degree of developed skill than his regular work, *and* the employee is expected to perform this higher grade of work at intervals upon request of his foreman. In this case, the employee should be classified in accordance with the highest knowledge and skill required of him.

B. The work now being performed by the employee is part of his regularly assigned work, but is of lower caliber than other duties which are also a part of his regularly assigned work. In this case the employee should be classified in accordance with the knowledge, skill, and requirements of the highest caliber of his regularly assigned work.

C. The work now being performed by the employee is of a higher caliber than he is accustomed to performing and is assigned for training purposes to afford him an opportunity to develop his knowledge and skill. This employee would not be classified until he meets in full all the major requirements of the higher classification. The employee should be given the classification that best describes the fully developed knowledge and skill of the employee as related to his work.

D. The work now being performed by the employee is a regular part of the assigned work of the employee to be classified. Although this work is not specifically covered by a job description, it requires no higher degree of knowledge and skill of the employee than other parts of his assigned skill. In this case, the employee should be placed in the classification that best covers the major part of the employee's work.

E. The work now assigned to the employee is of a lower caliber than work he had previously been assigned within his present occupation while in the employ of the company. It must be assumed in this case that either there exists no work of the higher caliber which the employee has demonstrated that he could do, or for some personal reasons (known in all probability to the man and the company) this employee prefers to continue working on the lesser skilled job.

4. Specialization on a Job

Often it will be found that an employee has been taught, through close supervision, an individual job which may involve making a setup, reading special blueprints, or other work a little more difficult than his regular job. In each case notice the differentiation: making one setup; reading special blueprints. Having been taught this individual job, the employee continues to do it over and over again until it becomes repetitive in nature. Even though the work being performed may be of the same nature as work being performed by an A operator, this employee would not qualify for an A rating because if given a new work assignment involving a new setup, he does not possess sufficient knowledge and imagination to attack a slightly different job of the same nature without supervision.

5. Supervision

An employee who has full knowledge and maximum skill in his occupation needs a minimum amount of work supervision or instruction in doing his work. Thus the amount of instruction or work direction which an employee requires to perform the work which he is assigned to is in some small way measured by the degree of "supervision" that he must receive. For the purpose of consistency, the job descriptions were, in general, constructed to indicate three levels of supervision. An interpretation of these levels of supervision follows:

A. Minimum, or Limited, Supervision. This level of supervision is associated with class A jobs, in which the employee is required to carry through a job assignment after only general instructions are given. It requires a thorough knowledge of the job, and an ability to solve any job problem, with assistance upon rare occasions only. The real test of the supervision needed is met by an employee when he is handed new assignments.

B. General Supervision. This level of supervision is associated with class B or similar jobs, in which the employee is required to complete a work assignment after general instructions have been given on familiar work; or more detailed instructions have been given on new work or on the more difficult assignments. It requires a general knowledge of the work, but, in addition, assistance is available to solve job problems when required.

C. Specific, or Close, Supervision. This level of supervision is associated with class C, D, or E work as indicated in the job descriptions. Detailed and specific instructions are given on methods of performing the work, and, of necessity, assistance is available at all times. It does not require a thorough knowledge of the job, but the employee should be capable of performing repetitive work without much additional in-

struction or supervision. New work assignments usually require detailed and specific instructions.

GENERAL DISCUSSION OF CLASSIFICATIONS WITHIN OCCUPATIONS

The following discussion is offered further to assist the committee members in properly classifying employees. This information is for reference only, and should be used as a guide to determine the correct interpretation of the major requirements of a job as covered in the descriptions for each specific job. The cases cited do not necessarily include all of the major requirements. Typical job classifications have been selected to cover work in the assembly, machining, maintenance, inspection, and testing departments.

Occupational Group—Assembly

The job classifications covering assembly and related work have been divided into five levels of mechanical assembly, five levels of electrical assembly, and also individual assembly jobs of a special nature not adequately covered under the general types of assembly jobs. The interpretation of the five levels of mechanical assemblers are covered here, as these jobs exemplify the problems of classifying employees in the other jobs in this group.

MECHANICAL ASSEMBLER E. The fifth level of assembly is the lowest level of mechanical assembly, and applies to assembly operations which can be performed by an employee after a short demonstration. Little developed skill in assembly is required to perform this type of work.

MECHANICAL ASSEMBLER D. The fourth level of assembly includes repetitive assembly operations which require skill in assembling or fitting in one type of operation only, and is generally not of a difficult nature.

MECHANICAL ASSEMBLER C. The third level of assembly includes a variety of assembly operations on a unit, where a fairly comprehensive knowledge of assembly and fitting is required, such as the meshing of simple gear assemblies.

MECHANICAL ASSEMBLER B. The second level of assembly includes work which requires a thorough knowledge of assembly and fitting on a product which is fairly complex in design and involves operations including the final assembly of such a unit, or making difficult fitting and aligning of a complex gear train, including bevel, helical, spur, and worm gears.

MECHANICAL ASSEMBLER A. The highest level of mechanical assembly is included in this class. It may involve work such as putting a new product on a production basis, or a thorough knowledge of the more difficult and complex products being assembled, where outstanding

skill is required to perform all of the operations involved in assembling and fitting of the various units for proper functioning of the completed product.

Occupational Group—Machining

In general, most of the machine operations are divided into three levels of skill. With the few exceptions shown in the job descriptions for specific jobs, these levels are as follows:

MACHINE OPERATOR C. The third level of machine operation includes such classifications as bench lathe operator C, lathe operator C, or turret lathe operator C. The duties will vary for each type of machine. At this level the operator is not required to make the original setup, but may make minor adjustments to maintain tolerances.

MACHINE OPERATOR B. This level generally includes making machine setups on the simpler work, or limited setups on more complicated work, with assistance in setting up as required.

MACHINE OPERATOR A. This is the level on which the work generally requires the setting up and operation of a machine for any work within the capacity of the machine. It requires a thorough knowledge of the machine and the use of the machine attachments. It requires the ability to perform the work assigned with only a limited amount of assistance.

Occupational Group—Maintenance

Most of the jobs in this group cover specific work assignments. Wherever the job has been divided into levels of skill such as A and B, the job descriptions will show the division of work, or specific requirements for each classification.

An employee should be classified into that occupation which best describes the highest degree of skill required of him. In so classifying an employee it is understood that he will be expected to do other maintenance work from time to time. In other words he will be subject to assignment to maintenance work other than that included under his job description, should there be a lack of work for him in his occupation, or should there be a rush project in which his services were needed.

Occupational Group—Inspection

In general, the job classifications cover every type of inspection, and each type has been divided into levels of skill according to the type of work performed. For this discussion, the job title "parts inspector" A, B, C, or D is used to demonstrate the interpretation for classification of employees into each level.

PARTS INSPECTOR D. This is the fourth level of inspection for this occupation. It covers repetitive inspection of simple machined parts in

related machine groups. The job descriptions cover the specific duties for this level of work.

PARTS INSPECTOR C. The third level of inspection covers the inspection of machined parts of more detailed design than those covered under D, in which skill is required in making setups to check the parts.

PARTS INSPECTOR B. The second level of inspection covers the inspection of any machined part in a given machine group in which a thorough knowledge of the operations being performed is required. A complete knowledge of the inspection methods for that group is required. This level, in general, will cover the higher skilled machine inspectors.

PARTS INSPECTOR A. The highest level of inspection for machined parts will include inspection of any machining operations in the most difficult machine groups, or on jig-boring operations. This level requires a versatile skill in inspection of first production parts, and a thorough knowledge of all types of machining operations in the most difficult of the machine groups: milling, profiling, drilling, or jig boring.

Occupational Group—Testing

The job classifications for testing finished products have been divided into four levels of skill. The knowledge of testing procedures and the degree of supervision and instruction received will, in general, determine the proper classification of the employees.

TESTER D. This is the fourth level for testing finished products. Detailed instructions are given to carry out the test procedure. The knowledge of the test procedure required is generally limited to one product or its components in which the test equipment is not difficult to operate and the product to be tested is simple in design.

TESTER C. The third level of testing includes the complete test of a simple product, and routine trouble shooting. The knowledge of test procedure is generally limited to one product, and includes setting up the product for test, and use of most of the test equipment for that product. Detailed instructions are given to carry out the test procedure.

TESTER B. The second level of test involves the complete testing of a complicated finished product, and routine trouble shooting on that product, with only general supervision. It requires a good knowledge of test procedures and the use of the more complex test equipment.

TESTER A. This is the highest level of test and involves the complete testing and trouble shooting on any complicated finished product, or its components to which a man may be assigned. It requires a thorough knowledge of testing procedures, and ability to carry out the assigned work with but little assistance.

INSTRUCTIONS ON PROCEDURES TO SUB-COMMITTEE MEMBERS

After checking to see that you have the necessary material for classifying the employees in your department, you will proceed to classify the employees. (Union and management sub-committeeemmen *should not* discuss proposed employee classification between themselves until they have each completed steps 1 and 2 which follow. The foreman and the shop steward will have duplicate lists of employees with which to work.)

1. Special Conditions of Classifications

A. Transfers and Terminations. If you observe on the listing the name of an employee who is no longer in your department because of transfer or termination, *do not* classify the employee. Instead, write the word "transferred" or "terminated" in the column designated for the classification.

B. Leaders. Employees presently serving as leaders should be assigned to the classification indicative of the highest skill they have been called upon to use in their present occupation. Since the title of "leader" does not connote higher skill than the classification, but is merely a blanket title designating a type of service that is near to supervision, and is used to designate those to whom a bonus rate is to be paid, the classification of "leaders" should not present any particular problem. The occupational code as explained later will instruct you as to the coding of such cases.

C. New Employees. An employee with less than three months' service with the company (a probationary employee) should be assigned a code number signifying his occupational group and occupation. The fourth digit of the code number will be 7, according to "Instructions on the Use of Occupational Code."

D. Transferred Employees. Employees who have been transferred into a new occupation and are still on trial should be assigned a code number, the fourth digit of which will be 6.

E. Employees Not Qualified. Employees who have been with the company more than three months, but who are not qualified for the lowest classification in their occupation, should be assigned a code number, the fourth digit of which will be 6.

2. Classification of Current Duties

A. Take the name of each employee on the classification list and determine in which occupation that employee belongs.

B. Read all of the job descriptions for this occupation.

C. From your knowledge of the work which the employee is performing, determine the proper classification in which the employee meets *all*

of the *major* job requirements according to the preceding "Instructions on How to Reclassify an Employee."

D. From the occupational code sheets, find the occupational code number for that classification, and write this number opposite the employee's name in the column "Classification of Current Duties."

E. Repeat this procedure until all of the employees on the list have been classified.

3. Meeting of Foreman and Shop Steward for Comparison of Classifications

A. Arrange a conference with the other member of the sub-committee, and compare, name by name, the classifications which each of you have prepared. This meeting between the union and the management sub-committee members should not take place "on the floor."

B. If you differ about any individual's classification, attempt to secure the facts and reconcile the classifications.

C. If you are unable to agree upon a classification of an individual, let the respective classification stand, but encircle the recommended classification code number on each copy to indicate that a difference of opinion exists.

D. When you have completed classification of all employees on your list, sign your name on the bottom of each sheet of the classification list. The like pages of both foreman's and shop steward's lists should be stapled in the upper and lower left-hand corners, with the left and top edges matched. In this manner the recommendations of each committee member will be visible at the same time to those who will further process the classification. The combined lists should be returned promptly to the plant classification committee.

4. General Summary

You are privileged to call upon the members of the plant classification committee and the joint job evaluation committee members assigned to your plant for assistance in interpreting the job descriptions, or for additional information which you feel is necessary for the correct classifying of employees.

You are also urged to call upon any qualified person in your department such as section foremen, leaders, or other shop stewards *for information* to assist you in properly classifying the employees on your list.

Employees should not be told of their recommended classifications at this time. At the conclusion of the job evaluation program, every employee will be informed by a personal communication of his official classification.

INSTRUCTIONS ON PROCEDURES TO PLANT CLASSIFICATION COMMITTEES

The function of the plant classification committee is to classify all employees whose classifications were not agreed upon by the members of the sub-committee. Those employees upon whom no agreement could be reached at the line level are designated by a circle drawn around the recommended classification code number on the listing which was received from the sub-committees. It will be your duty to call upon anyone necessary in attempting to reconcile the differences in classification. When all of the classification lists have been received from the sub-committees, you will be able to classify the disputed classifications by this method:

1. Group, if possible, all disputes which seem to be of a similar nature. If certain groups can be set up as such, then a study of any individual case or classification will usually suffice as being representative of the entire group.
2. From whatever records are available, or from other sources which are considered proper, try to determine jointly the correct classification of the employee.
3. From the occupational code sheets, find the occupational code number for the agreed-upon classification and enter this in the appropriate column.
4. Transcribe all classification code numbers for all of the employees whose classification was agreed upon by the sub-committees, and also the recommendations of the plant classification committee to the plant committee list of employees.
5. The plant classification committee should classify as many of the employees as possible that are marked "transferred" as they have the facilities to follow up on these.
6. All members of the plant committee will then sign each page of the master listing, and forward all copies of the classification sheets to the joint job evaluation committee.

INSTRUCTIONS FOR THE USE OF THE OCCUPATIONAL CODE

Explanation of the Occupational Code

The occupational code sheets show a space for a "job description number" opposite each classification. This is the number of the job description to which you refer in checking or requesting individual job descriptions. The "job description number" is not used in recording an employee's classification.

Key to the Occupational Code

Occupation: First Digit. Each job has been grouped under the occupation with which it is most generally identified. Thus mechanical assembly, electrical assembly, and calibration are all grouped under the general heading of "assembly," and are therefore in group I. This group number is the *first digit* of the occupational code number order, as follows:

1. Assembly.
2. Machine shop.
3. Wire mill.
4. Plating and finishing.
5. Traffic and stores.
6. Inspection and testing.
7. Service and maintenance.
8. Foundry.
9. Wood working

Nature of the Work: Second and Third Digits. The *second digit* and the *third digit* of the occupational code more specifically identify the nature of the work. Thus for mechanical assembly the second and third digits are 01, whereas for electrical assembly they are 02.

Classification: Fourth Digit. The *fourth digit* of the code number may be either 1, 2, 3, 4, 5, 6, 7, 8, or 9, depending on how the employee is to be classified. The exact meaning to be taken from the fourth digit is as follows:

- 1 Employee is to be classified A.
- 2 Employee is to be classified B.
- 3 Employee is to be classified C.
- 4 Employee is to be classified D.
- 5 Employee is to be classified E.
- 6 Employee newly transferred from another occupation and is still on trial, or employee has been in the employ of the company more than three months but does not qualify for the lowest classification in his occupation.
- 7 Employee has been less than three months in the employ of the company (probationary employee).
- 8 Leader.
- 9 Single-skill jobs (not broken down into A, B, etc.).

Examples

The following possibilities show of the use of an occupational code number, where the employee is engaged in the occupation of mechanical assembler:

1. If the employee qualifies for mechanical assembler A his code number will be 1011.

2. If the employee has been newly transferred from another occupation into a mechanical assembly job and is still on trial, his code number would be 1016.
3. If the employee has been in the employ of the company more than three months but does not qualify for the lowest classification in the occupation his code number would be 1016.
4. If the employee is working on a job covered by a job description of mechanical assembler A, B, C, D, or E, but has been less than three months with the company, his code number would be 1017.
5. If an employee is a leader in the mechanical assembly group his code number would be 1018.

INFORMING EMPLOYEES OF OFFICIAL CLASSIFICATIONS

Only after all work on classification and evaluation has been completed should employees be informed of their official classifications. At that time it is suggested that the employees not only be informed of their official classification, but also the rate which the classification pays. This information should be passed on to the employees by means of a printed slip signed by a responsible party. There have been and will continue to be differences of opinion about the correctness of the classifications. Each should be taken up as a grievance, rather than handled by the classification committees. Were the classification committees to handle the matter, it would mean a continual round of confusion, for their experience does not qualify them to dispose satisfactorily of bona fide grievances.

11. DEVELOPMENT OF THE WAGE STRUCTURE

THE BASIC WAGE STRUCTURE of a company is determined by a variety of factors, none of which is related to job evaluation. Job evaluation consists of a sequence of job relationship processes and thus bears no direct relationship to the wage structure as a whole. The two are therefore complementary, and when used together can then be the basis of accurate wage determination. Since they are unrelated, it makes little or no difference which is completed first. In industry, the usual practice has been to rush through the evaluation processes and then develop a wage structure on which to apply the job evaluation findings. Better results may be obtained if the wage structure is developed prior to the evaluation work, since there is always a tendency to allow less time for this work than is necessary. Wage structures concern dollars and cents, and therefore are negotiable if the plant's employees are represented by a collective bargaining unit. Wage negotiations should be divorced from evaluation procedures until the actual evaluation work is completed; they should be handled in such a way that the committee members are not forced to be evaluators and negotiators at the same time. In many cases of joint committee action the members of the committee are also representing the company and the union in negotiations.

With or without job evaluation every company having a large labor force is forced to construct a basic wage structure, even though such a structure may not have all the formal accessories. Companies which have decided to determine wages by means of job evaluation, therefore, must be prepared to convert evaluated points to money values or rates. This process is commonly called "conversion"

and can only be accomplished in conjunction with a definite wage structure. It is not proposed to detail the many aspects of wage structures, in itself a subject that has baffled some of the most brilliant of economists. Our subject is job evaluation, but since no useful purpose could be served by job evaluation alone, it is necessary to discuss conversion processes to bridge the gap and thus give evaluation findings practical value. To illustrate this conversion process, discussions will be limited to brief sketches of the principal factors involved in any common wage structure on which a job evaluation program might be superimposed.

If a definite line of cleavage can be established between job evaluation and the development of a wage structure, then, and only then, can we expect to achieve a complete understanding of true wage determination. Regardless of the manner of approach there still remains a generous portion of psychological rationalization in wage negotiations. Specialized techniques, popularized terminology for special issues, and special investigations all will continue to becloud employee relationships. The old technique of "fist pounding on the table" is by no means ready to be displaced, as human nature does not change so easily. Nevertheless, there are definite signs that wage structures can be designed according to plan without forcing the men who plan them to consume quantities of headache tablets in the process.

The principal issues involved are discussed separately in the following chapter sections.

"Anchor Points" of a Wage Structure

All wage structures must have two terminal points (Figure 39). The maximum and the minimum rates define and limit the wage payments of all employees on that payroll. Some of the factors that vitally affect the determination of these two points are: cost of living, standards of

living, industrial rates in the community, and rates common to the industry.

The years 1936-1944 saw leveling action of many wage structures. Government regulations have been responsible for part of this action by gradually but steadily increasing minimum wage payments. In 1934 it was not uncommon to find \$.35 minimum rates and \$1.20 maximum rates. In 1945 the range was \$.60 to \$1.35, showing an increase of 71 per cent at the minimum terminal point as compared with a 12.5 per cent increase at the maximum terminal point. The great increase in membership of the vertical-type unions which resulted in pressures being applied to employers specifically to help the lower-paid groups accelerated what the government had already started.

Usually in negotiating terminal points in wage structures, past practice was the deciding element. On several occasions blanket increases were granted which when charted gave a parallel change to the base line of the wage structure. The differentials of percentage increase in terminal points as cited in the preceding paragraph would tend to disprove such wage structure adjustments. During the period of World War II most disagreements centered around the minimum terminal point or the lowest-wage job range.

The first step in the negotiations requires that the company and the union agree to the rates to be paid the least important and the most important jobs. This may be difficult to ascertain, for concepts of job values may not be the same. In the absence of knowledge about which jobs finally are to be positioned at the terminal points, it will suffice to agree in terms of "the lowest evaluated job" and "the highest evaluated job." Figure 39 is a chart showing where the company and the union have agreed that the minimum terminal point was to be \$.60 per hour, and the maximum terminal point was to be \$1.47 per hour. This first step is accomplished without reference to point values of jobs, which are to be determined later.

Width and Location of the Labor Grades

The width and the location of the various labor grades is usually the least controversial of the fundamental issues. Often the union and the company enter these negotiations with similar ideas as to the proper number of labor grades.

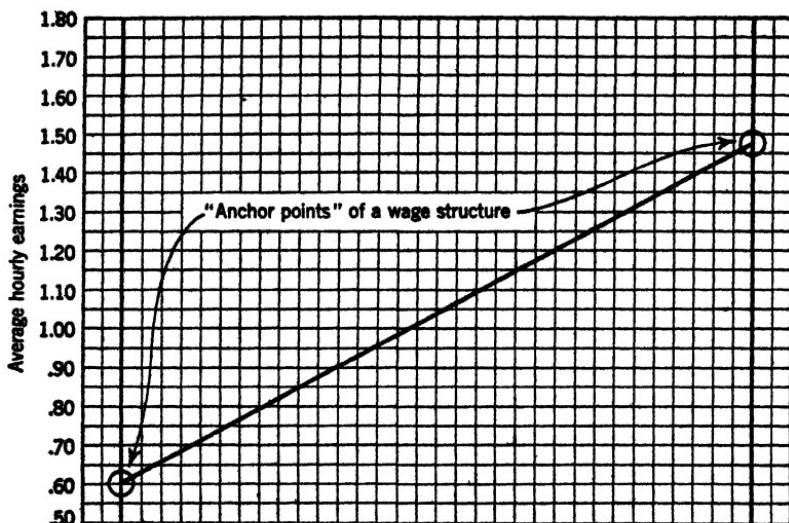


Figure 39. Simple wage structure.

to be established. Most of the experts agree unanimously that there should be from ten to fifteen labor grades, if labor grades are to be a part of the structure. Many companies have discontinued the use of "penny differentials" between job classifications, chiefly because of complexities in wage administration. Robert D. Gray* reasons excellently when he says, "Such a multiplicity of rates does not conform to general practice. If one goes into a store to buy shoes, or stockings, or a suit of clothes, he will discover that the store carries several grades of each of these com-

* *Systematic Wage Administration in the Southern California Aircraft Industry*, Industrial Relations Monograph 7, New York, Industrial Relations Counselors, Inc., 1948.

modities with a definite price spread between them. For example, a buyer may have to choose between a pair of shoes at \$3.95, and a pair at \$4.95. A storekeeper would not have some shoes at \$3.75, some at \$3.80, and some at \$3.85. Prices that are close together imply differences in quality so slight that they could not be recognized by the purchaser."

Employers cannot successfully defend penny differentials in rates. For years such rates have existed, but in the light of modern wage administration they are symbolical of all that is weak in slipshod wage administration. It would seem more proper to determine the number of labor grades by dividing the monetary spread between the anchor points of the wage structure by a minimum differential of 5 cents. There is no specific reasoning which will substantiate this rule of 5-cent differentials. Usually, if there are disputes in the determination of the labor grade widths they arise from the exact locations of the grades. If job evaluation approximations are reasonably accurate, then there is no reason why the number of points included between the terminal points of the wage structure should not be divided evenly to make up the labor grades.

Height of the Labor Grades (Rate Range)

When the number of labor grades has been determined, it is necessary to establish the vertical range in money or spread of rates to be paid a job falling within one or another of the labor grades. Two approaches to this problem are possible:

First, elimination of a range in rates, and establishment of single rates (known as "pin-point rates" or "single rates") for each labor grade.

Second, establishment of rate ranges for each labor grade.

Single rates for each labor grade present no problem and are much easier to administer, provided certain other conditions are present. This section deals with the procedures

necessary when it has been decided that rate ranges should be used. Rate ranges seem to become increasingly popular in the more formalized wage plans. Their existence is justified in the absence of incentive programs. Where an incentive plan exists there is no need for rate ranges, as they would complicate, if not make impossible, the determination of real incentive rates. Where there are no incentive rates, rate ranges permit differences in rate of pay between two or more employees doing the same work. The differences are based upon the relative efficiency and skill of the employees. The extent of the ranges must be determined by experience and study. A wealth of data coming down from the days of Frederick W. Taylor are available for those who might be interested in statistically making such a determination. It is generally acknowledged that the range for a given labor grade should be narrower for a lower skilled job than for those jobs which require considerable training and experience. Experience has taught wage structure designers that the percentage spread between the minimum and the maximum ranges of the various labor grades should be consistent. This does not mean they should be the same, but that there should be uniformity in the rate of change of ranges.

An actual determination of the rate ranges for the labor grades may be seen in Figure 40. In the example shown, the range as determined by the *Range line* is 10 cents per hour at the lower terminal points and gradually increases until the range becomes 20 cents per hour at the upper terminal points. The lower terminals of the *Base line* and the *Range line* designated *FG* would, if extended downward, pass through the point value of the least evaluated job as established by the job evaluation. The upper terminals designated *HM* would, if extended downward, pass through the point value of the most valuable job. Once the money spread of the lines *FG* and *HM* have been determined, the rate ranges for each labor grade are established by the following method:

1. Determine the horizontal mid-point of each labor grade. This will be a point halfway between the minimum and the maximum job evaluation points which limit the labor grade in question.
2. Draw a vertical line through the mid-point of each grade.

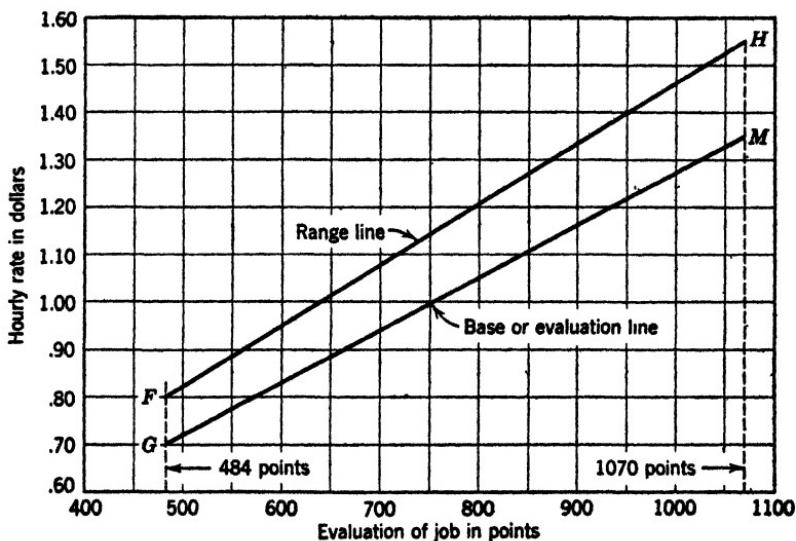


Figure 40. Wage structure with base and range lines.

3. Determine the point where this vertical point intersects the *Range line*.
4. Project this point horizontally until it intersects the scale called *Hourly rate in dollars*. The money value of this point of intersection is the maximum rate for the labor grade in question.
5. To determine the minimum rate for each labor grade proceed as in steps 1-4 but substitute the *Base line* for the *Range line*.

Due consideration in establishing ranges must be given to ranges which are equitable. A system of rate ranges in which an individual's progress in the lowest labor grade would be the same as in the highest labor grade is not equit-

able or practical. Any tendency to establish rate ranges in step formation should be resisted, for example, where the range would be 10 cents per hour for the bottom or first several labor grades, 15 cents per hour for intermediate labor grades, and 20 cents per hour for the top labor grades. It is next to impossible to explain the reasons why some employees should be in those labor grades which call for dime increases, as compared to the elite "fifteen-centers," or the "20-cent rangers."

Ingrade Progression

It is supposed that a rate range for each labor grade and, consequently, for each classification of job was established on the theory that such a range is the next best approach other than a formal incentive plan; or, conversely, if an incentive plan is in operation, a rate range is unnecessary. Once this premise is established, the ideal method of individual progression within the rate range would be that method which parallels the operation of a formal incentive plan. Two general methods are in wide use for the administration of ingrade wage progression:

1. Merit increases.
2. Automatic increases based on length of service.

Systems of merit increase in which wage increases within a given classification are based on "meritorious" performance on a job have been difficult to defend, since these systems are based on comparisons of individuals to each other, instead of measurement of an individual against a job standard. Such a system puts the burden of proof on the employees to demonstrate nebulous qualities of meritorious performance, and leaves the door open for the exercise of purely personal opinions.

Automatic increases are easy for the employee to understand and easy for the employer to administer, but in effect nullify the avowed purpose of providing an incentive since the operation of a straight automatic system rewards equally

the competent and the incompetent employee. Both of these systems have been used with varying degrees of success for many years. The effectiveness of a merit system depends, it is believed, upon the degree of precision with which jobs are defined, and employees classified. The problem remaining is to work out a system which will attempt to create an incentive toward more efficient work and at the same time minimize the disadvantages of straight merit and fully automatic ingrade wage progression plans.

In keeping with this objective, an employee classified within a certain labor grade should receive an automatic increase of so much per hour at regularly stated periods within the range of the grade and subject to a demerit review prior to each automatic increase. Under the system of a demerit review an employee receives an automatic increase unless, in the opinion of his supervisor, his performance on the job does not warrant such an increase. The plan also proposes that an employee who has failed to receive an automatic ingrade increase after several successive reviews would be subject to discharge from the company. Such a plan would eliminate much of the criticism now leveled at the so-called merit systems, in so far as it places the burden of proof on an employer's supervisors to signify their dissatisfaction with an employee's progress. The theory is that it is easier to detect poor performance than good performance, and that it is easier to create objective job standards against which employees can be measured than it is to define what is meant by "meritorious performance." Some companies have compromised the problem by establishing automatic increases through the lower parts of each labor grade range, and merit increases for the remainder of the range. The assumption is that somewhere within the rate range for the labor grade lies "average performance," and that anything above such performance should be rewarded on the basis of merit. Such a theory assumes, of course, that no merit is required to reach average performance. Companies considering a combination of automatic

increases and merit increases are duly warned that such a combination at best would contain the bad points of each system without accomplishing the objective of either system.

Outgrade Progression

Outgrade progression relates to compensatory steps to be set up as a part of a training program, other than a formal apprenticeship system. It is necessary to establish the hiring-in rate for beginners and a beginners' rate of automatic progression while acquiring sufficient skill to become classified. The location of the point at which the beginner should be considered for reclassification must also be determined.

Hiring rates depend greatly upon (1) the classifications which have been established and (2) straight negotiations between the company and the bargaining unit representatives. Often the hiring rate will be the same as that rate of the minimum of the labor grade which contained the classification of the lowest evaluated job. For example, a company has the classifications assembler A, B, C, and D, and the minimum rate for the labor grade in which assembler D falls is the same as the hiring-in rate. When this condition exists there is no problem. Only when an employee is hired specifically for a job of which the minimum classification exceeds the hiring-in rate are outgrade progression procedures necessary. The case of the unskilled applicant who wants to train for the job of grinder in the tool room can be cited in illustration. The lowest classification of the occupational group of grinders calls for considerably more than the hiring-in rate. All new unskilled employees should be assigned an occupational title which would designate their occupation, as turret lathe operator, trainee. All trainees would progress automatically to the minimum of the lowest classification in the occupation for which he is being trained. At the time an employee reaches his maximum rate as a trainee, his qualifications would be reviewed and, if found to be satisfactory, he would be reclassified and

given the occupational title of the lowest classification in his occupation. From this point onward the employee's rate would be adjusted by any ingrade procedure for progression which the company might have provided. This suggested procedure affords a fair rate progression and serves to provide the necessary opportunity of reviewing the trainee's development before classification.

Upgrading of Employees

An employee should have an opportunity of increasing his earnings through satisfactory performance on the job if higher paid classifications are open. All systems of upgrading depends upon two factors: the ability of the employee to do the work in the higher classification, and the availability of work in the higher classification.

During the feverish years of World War II the emphasis was upon finding as many skilled workers as was possible, and, failing that, on developing skills by means of employee training on the job. In periods of stabilized employment upgrading must occur, not as a matter of course, but only after thorough and careful consideration of the need for additional employees in the higher classifications. Companies which hope to maintain or better their position in competitive markets must work constantly toward improved production methods. This fact adds further emphasis to the necessity of considering upgrading as it concerns specific industrial plants. Therefore, it must be the policy of progressive companies to afford maximum opportunities for promotion, and this policy must be administered in connection with all the other factors which affect the successful operation of a business.

In the administration of upgrading, an employee who has reached the maximum rate for his classification is reviewed by his supervisor at periodic intervals, and he is eligible for upgrading if work is available in the higher classifications, and if he is qualified to perform that work. The employee upgraded to a higher classification receives the minimum rate

of that classification, or the rate he had at the time of the upgrading, whichever was higher. The employee is then eligible for ingrade increases as provided for by that type of progression. Any employee upgraded to a higher classification should be considered as on trial for at least a month, and in the event of unsatisfactory performance during that period would be returned to his former classification and rate. This method of upgrading is intended to eliminate equally favoritism and neglect, to ensure a fair opportunity for advancement to every employee who, through study, training, experience, or ability, is qualified for an available job in a higher classification. These provisions should not preclude more rapid advancement where, in the opinion of the employer, it is in the interests of increased production.

Downgrading of Employees

One of the basic premises of job evaluation is that the job determines the rate, and consequently if a man does the job he gets the rate for that job.

The issue of downgrading has always been highly controversial, since such a procedure is contrary to the position of organized labor. Unions have always tried to peg wages to certain points which are usually the point of highest wages received by the individuals concerned. This position is opposed to the principles of job evaluation. If the company and the union are attempting by means of job evaluation to establish a sound wage structure, then men must be paid the evaluated rates for the jobs that they are required to perform. However, the rate adjustments which downgrading make necessary often require the establishment of procedures which make some allowances for the employee's personal adjustments when for one cause or another he accepts lower-grade work and lower pay. This discussion excludes the conditions which may make downgrading necessary, and attempts only to devise a mechanism for administration of the changes in an employee's status.

A downgraded employee should continue to receive his previous rate for a reasonable time, say a period of two weeks or so, after which he should receive the maximum rate of the classification into which he was downgraded, or his old rate, whichever is lower. The company should make every effort to avoid downgrading, for the danger of reduction in initiative and morale is something that cannot be minimized. At the same time, in a period of decreasing employment there cannot, by definition, be the same work for the same number of people in those higher classifications as in previous periods. Sound job evaluation precludes the possibility of downgrading employees and at the same time preserving their rates, since the ultimate result of such a policy would be to create inequities within the wage structure.

Administration of a Joint Job Evaluation Program

The importance of providing continuity of the evaluation program has been discussed in other chapters. A specific plan is outlined to provide the details necessary to ensure the continuity. It has been said that "The real merit of any project is determined by its degree of completion." Job evaluation is not completed until definite plans and provisions are made to ensure the proper disposition of the everyday problems which arise in the operation of an evaluation plan. Since joint efforts in job evaluation work have on the average worked very well, there are no good reasons why joint efforts cannot be utilized in the continuing processes.

After the actual evaluation work has been completed by the joint job evaluation committee a permanent chairman is appointed. This person could very well be the salary and wage administrator of the company, or some other person who is held responsible for the wage structure of the company. He should keep all regular minutes of the proceedings of regular and special meetings. As permanent chairman his principal function is to advise, counsel, and provide facilities which

help to expedite the work of the committee. He has no official vote in the work of the committee.

The primary functions of the continuing joint job evaluation committee are to maintain and promote internal consistency of wage rates, and to explain this consistency to all employees by means of regular and systematic approaches. Both management and labor must regard wage administration in the light of a true projection of the original evaluation plan. New jobs which require study and evaluation will appear. The general rate structure will have to be checked periodically with the wage structures of the industry and the community. Changes must be made with change, and sometimes methods of countering these changes must be provided. An outline of procedure designed to cover most of the problems which might arise under normal routine is as follows:

1. EVALUATION OF NEW JOBS

A. A company may have advance knowledge of special equipment or some new setup which in the near future will require man-power. In such a case, the secretary or chairman of the evaluation committee declares such jobs to be new classifications or occupations. Any member of the committee may bring to the attention of the committee a job which he believes to be distinctly different from existing jobs. The action of the committee is in all cases to be considered final.

B. When a new job has been established, the secretary develops a job description and evaluates it by using the job evaluation manual. He then applies the number of evaluated points to the wage structure and thus determines the labor grade, and maximum and minimum wage rates for the job. A record should be kept of all jobs that were evaluated in this manner, and such jobs would then be either approved or rejected in the regular meetings of the committee.

2. REVIEW OF EVALUATIONS AND JOB DESCRIPTIONS

Since the job content of any classification is subject to almost constant change, the review of the job and its corresponding job description should be set up on a perpetual audit basis. If the wage structure is constantly patrolled, the opportunity of unbalance is considerably reduced. These jobs should be reviewed in a systematic fashion at regular intervals. Reviewing is especially important if a large number of job classifications must be considered. The job analysts should study the jobs and make suggestions for changes the year around, rather than attempt to check the job descriptions only once a year. It would be ridiculous to believe that the original job descriptions were free from omissions and errors. The wage administration policy must provide means of detecting and correcting such errors.

Most companies experience pressure moves or organized campaigns to increase the point values of jobs; these moves would in turn result in higher wage rates. If they are not resisted the structure becomes unbalanced, and the employees are again dissatisfied with the inequities which results. The continuing wage administration committee should be instructed in the dangers involved in distorting job values for the temporary financial relief of aggrieved employees. The only proper method of increasing wages is to open negotiations looking toward an upward relocation of the anchor points. Piecemeal attacks through inflating job values will only jeopardize the true relative values which have been established in an orderly manner. All matters coming before the continuing joint job evaluation committee which cannot be resolved by the committee should be settled by an arbitrator, as the regular grievance committees are not usually qualified to render equitable decisions on this type of work.

12. A JOB EVALUATION MANUAL FOR FOREMEN AND SUPERVISORS

IN INSTALLATIONS of job evaluation procedures in plants of an appreciable size, management must always be certain that foremen and supervisors at the working level understand the chronology of events related to the wage issues. Progressive companies recognize the importance of "selling" their supervision on the merits of this type of wage determination, and are constantly devising methods to explain in detail, from a managerial standpoint, the objectives sought and the procedures used.

In the past, foremen and supervisors have often been solely responsible for the determination and the setting of wage rates. Suddenly to relieve supervisory employees of this responsibility without reasonable explanation would be cause for those employees to wonder just where they stood in the general scheme of things. This transition period is important, and cannot be passed off as just one of the aspects of the changing times. Experience has shown that anything that is done to assist the foremen and supervisors fully to understand the evaluation procedures is well worth the time and effort of management. In instances of joint participation the unions have always made it a point to keep the stewards well informed on the progress and details of the work. Unfortunately management has not always realized the importance of doing the same with its supervisors, who by the very nature of their work are responsible in a large way for the success of the program.

To illustrate some of the possibilities of educating supervisory personnel in job evaluation, companies have found it helpful to issue job evaluation manuals expressly directed toward supervisory levels. An example of one of the better manuals follows:

A MANUAL FOR FOREMEN AND SUPERVISORS FOR USE IN THE JOINT JOB EVALUATION PROGRAM

INTRODUCTION

A new plan for the payment of hourly employees has been put into operation throughout the company. This new plan applies to all hourly employees (with the exception of _____) within the bargaining unit represented by Local _____. This plan is called the _____ Joint Job Evaluation Plan.

This manual has been written primarily for the foremen and supervisors whose job it will be to work under the terms of the plan and to answer the questions of employees concerning its various features. Because of this an attempt has been made to incorporate in the manual not only a complete outline of the plan itself, but also to include, in some detail, the historical background which led to its inception, an explanation of the method used to determine job values, and a graphical presentation explaining how the wage structure was developed.

The plan differs markedly from our former system and embraces many features which will require careful study by foremen and supervisors if they are to be fully understood. However, it should not be inferred from this that the plan presents complexities or contains anything of a highly technical or "hard-to-understand" nature. Job evaluation owes its wide acceptance by labor and management alike to the fact that it is a plan which the employees can comprehend without specialized training.

In its development the plan has involved the expenditure of a vast amount of time and energy on the part of both union and company representatives. It has been a joint effort, and it is confidently expected that it will operate to the mutual advantage of the employees who come within its scope and the company. The more you know about the plan the better equipped you will be to discuss its various features with both present and future employees.

SECTION I. WHY JOB EVALUATION?

On _____, Local _____ was certified by the National Labor Relations Board as the collective bargaining agent for all hourly paid production and maintenance employees in the company. This certification was based on the result of an election held under N.L.R.B. rules and regulations. Shortly thereafter, negotiations began between the union and the company looking to the execution of a collective labor agreement. At an early stage in the negotiations, when it appeared that a lengthy period might elapse before agreement could be

reached, it was determined that the agreement, as finally negotiated, would be effective as of _____. On _____ the union and the company agreed to submit all unresolved issues to determination by arbitration. In doing so both the union and the company expressly stated that they were in agreement on the following paragraph and desired that it be written into and become part of the resulting collective labor agreement:

A committee consisting of representatives of the company and of the union shall be organized for the purpose of preparing a job classification system for the employees of the company, and shall classify employees according to the system worked out. In the event of any disagreement, the classification upon which the company and the union are unable to agree shall be submitted to the arbitrator for decision.

By the terms of this paragraph, therefore, early provision was made for setting up the committee we now refer to as the Joint Job Evaluation Committee.

THE JOINT JOB EVALUATION COMMITTEE

Immediately a Joint Job Evaluation Committee was appointed to plan, develop, and execute a program of job evaluation applicable to the type of work performed in the company. This committee was composed of five union representatives and five management representatives and was committed to pursue its objectives impartially and in accordance with sound principles of job evaluation as determined by a study of some of the more successful plans in current use in industry.

SECTION II. WHAT JOB EVALUATION IS

1. SETTING UP THE PROGRAM

In its deliberations on the subject, the Joint Job Evaluation Committee was fortunate in having the advice and counsel of Mr. _____, who had repeatedly demonstrated his ability in this field. The committee also had the advantages of the voluminous reference data that has been developed in the more successful job evaluation plans in current use in industry. Many of these plans have been in successful operation for many years. (Job evaluation is over twenty years old and has been consistently improved as its use has become widened.) As a result of discussion and study of the various plans the committee found that to achieve its objectives it would have to set up and carry out a broad program of activities. A general outline of this program can be given as follows:

1. Every job within the scope of the program would have to be identified and given a distinguishing title and job number.

2. A description would have to be written for each job to define clearly the requirements of that job.
3. Each employee would have to be classified in accordance with the title of the job description which best described his or her work.
4. A job evaluation manual would have to be written to serve as a "yardstick" in evaluating the jobs.
5. Each job would have to be evaluated in accordance with the job evaluation manual.

2. JOB TITLES AND JOB DESCRIPTIONS

The committee was immediately faced with the fact that if it were to undertake to evaluate all the jobs in the company it must know what these jobs were, and have a factual description of each. Job titles and job descriptions, therefore, became the first and second objectives respectively on the committee's program. The company had expanded its personnel and facilities to meet production requirements with such speed that its classification system no longer gave a clear picture of the jobs being performed by many of the employees. Accordingly, to accomplish its first objective, the committee drew up a tentative list of all existing jobs then being performed in the company. This tentative list was submitted to all foremen and shop stewards, who were invited to study it and to recommend changes. Upon receipt of recommendations, the committee drew up a new list of acknowledged jobs and, with this as a guide, and after the characteristics of work had been determined, the writing of the job descriptions was started.

To carry out the second objective each member of the committee undertook to write descriptions for those jobs with which he was already familiar, or which, because of his geographical location, he was in a position to study at first hand. In the meantime a questionnaire had been distributed to all employees asking them to describe their jobs. The answers to these questionnaires became available to the committee as a further aid in writing the job descriptions. It should be noted that job descriptions are necessary to the operation of any job evaluation plan for these reasons:

1. They are required by the committee when evaluating jobs.
 2. They are a permanent record of what the committee visualized the job content as being composed of. Any subsequent change in job content can thus be readily identified and the job re-evaluated.
 3. They are a necessary guide for classifying employees.
 4. They are important for employee information.
 5. They are an aid in the proper hiring and placement of employees.
- The work of writing the descriptions was completed by _____ at which time they were submitted to foremen, supervisors, and shop stewards for criticism or approval. The descriptions were then written

in final form and the committee was in a position to give its undivided attention to creating a job evaluation manual for use in evaluating all the hourly-rated jobs within the scope of the program, and a procedure for the classification of employees. Considerable work had already been accomplished toward both of these ends but several problems still remained.

3. THE JOB EVALUATION MANUAL

The task of writing the job evaluation manual was probably the most delicate and difficult of the committee's deliberations. The manual was to be the means whereby the relative value of jobs would be measured, not only then but in the years ahead. To serve this end successfully only two things were necessary, namely, agreement by both parties that:

- (1) This will be our standard of measurement, and
- (2) This is how we will use it.

The manual could be theoretically perfect as a means of measuring relative job values, but if either the employees or management were skeptical of its fairness or at odds as to how it should be interpreted then the manual would defeat its hard-won end. That the manual as finally approved by the Joint Job Evaluation Committee has been used successfully for some time now is a testimonial to the painstaking care which went into its development. A brief explanation of the manual follows:

JOB CHARACTERISTICS

The _____ Joint Job Evaluation Plan is based on the assumption that the company pays its employees for certain specific characteristics which they possess and which are necessary to the performance of the job. These characteristics of work are:

1. Education.
 - a. Schooling or its equivalent.
 - b. Experience and training.
2. Skill.
 - a. Manual skill.
 - b. Mental skill.
3. Responsibility.
 - a. For safety of others.
 - b. For spoilage of productive parts and productive materials.
 - c. For damage to machine and equipment.
4. Accuracy.
5. Physical effort.
6. Mental effort (concentration).
7. Working conditions.
 - a. Hazards to self.
 - b. Surroundings.
 - c. Connected expense.

These characteristics are the ones which the committee found entered most frequently into the jobs being performed in the company. Other companies, performing a different type of work, might have different characteristics but in so far as the company is concerned these are the ones which were felt to be the most significant. In other words, when we talk about a job we are talking about a combination of these seven characteristics.

WEIGHTING THE CHARACTERISTICS

It is obvious that some of these seven characteristics deserve more recognition than others and this fact should therefore be reflected in any evaluation of the individual jobs. The committee, having decided that the basis for evaluation would be a scale of points ranging from 0 to 1000, divided this number of points among the various characteristics, each of which was assigned a specific number of points in proportion to the importance, or weight, which the committee felt should be given to it. The job evaluation manual shows in detail the number of points which were assigned to each characteristic.

BREAKDOWN OF CHARACTERISTICS

The extent to which any characteristic enters into a job depends upon the nature of the job. For example: a jig borer operator who must be able to read and interpret complex blueprints and solve problems involving trigonometric functions obviously requires more *schooling* than does a porter. Because of this variation each characteristic is of necessity broken down into steps, each step being assigned a range of points clearly designating a level or degree. Thus in the job evaluation manual we find that *schooling or its equivalent*, which is part of the characteristic *education*, is broken down into six steps, the lowest of which is assigned points ranging from 0 to 12 because the "job requires only the understanding of simple verbal instructions." The sixth step on the other hand is assigned points ranging from 63 to 75 because the "job requires an all-round knowledge of electrical, mechanical, or chemical principles." In this manner each characteristic is broken down so that in actual evaluation an analysis of each step makes it possible to say definitely what step in each characteristic the job falls in. As the range of points for each step is relatively small it is then a simple matter for the Joint Job Evaluation Committee, on the basis of the pooled judgment of all its members, to determine the number of points which should be given for the various characteristics. The sum total of the points of all characteristics determines the final value or evaluation of the job.

Sufficient copies of the joint job evaluation manual have already been distributed to make it a simple matter for any one who wishes to study its contents in greater detail to obtain one and study it at his leisure. The foregoing paragraphs are intended to point out the reasoning which the committee used in developing a manual.

4. EMPLOYEE CLASSIFICATION

A detailed procedure for the classifying of employees under the new job titles as determined by the committee was completed early in _____ This procedure provided for the setting up of a classification committee in each of the various company plants. These committees were composed of two management members appointed by the respective plant managers, and two union members appointed by the union. All plant classification committees were under the jurisdiction of the Joint Job Evaluation Committee and were subject to the rulings of that committee in all matters of interpretation or procedure. In turn, however, the plant classification committees were given full authority over a large number of departmental sub-committees which they were empowered to set up to do the actual classifying of employees. The sub-committees were composed of two members: a foreman and a shop steward. One or more such sub-committees were appointed in each department.

All of these committees had been appointed and were functioning by _____. To prepare them for the work of classification several joint meetings were held and listings of employees, job descriptions, and printed detailed instructions covering policy and procedure issued to each member. Classification was completed by _____, thereby completing the committee's fourth objective. In the meantime other phases of work were being done by the evaluation committee.

SECTION III. HOW JOB EVALUATION WORKS

Completion of the job evaluation manual enabled the work of actual evaluation to proceed, with the result that by _____ all jobs had been evaluated. The company and the union were now for the first time in a position to discuss wages on the basis of known facts about each job; more important, agreement had been reached as to the relative value of any one job as compared with another. For the time being the work of the Joint Job Evaluation Committee was completed and the results of its efforts turned over to the company and the union negotiating committees to serve as a basis for a new wage structure to be included in the labor agreement then being negotiated. Around this wage structure was to be built the Joint Job Evaluation Plan under which we are now operating.

1. NEGOTIATING THE WAGE STRUCTURE

It will be recalled that the preliminary agreement fixed a minimum of \$.70 per hour for the lowest classification and a maximum rate of \$1.55 per hour for the highest classification, as was to be determined

by job evaluation. The lowest classification proved to be MECHANICAL ASSEMBLER E with 484 points, and the highest classification TOOL MAKER A with 1070 points. The result was the *Basic wage line* shown in Figure 41 [of the present volume]. By negotiation the company and the union agreed to a range of \$.70 to \$.84 for the lowest classification, and a range of \$1.35 to \$1.55 for the highest classification, thus establishing two wage lines: *Base or evaluation line* and a *Range line*, as shown in Figure 42 [of the present volume]. These two lines were the foundation upon which was built a proposed wage structure. This wage structure was later modified by terms of the ruling subsequently received from the National War Labor Board.

On _____ the job evaluation plan was approved by the government with some changes, the most significant of which were (1) that a range of \$.70 to \$.80 was set for the lowest classification, and (2) a range of \$1.33 to \$1.53 was set for the highest classification. [See Figure 43.] As the wage structure for which we had asked approval was based on a system of labor grades (see the section on labor grades following), the immediate effect of this part of the ruling was reflected in the adjustments that became necessary to bring the rate range for each labor grade in line with the ruling. The adjusted labor grades are shown in Figure 44 [of the present volume]. Apart from the actual wage structure a system of ingrade and outgrade rate progressions was also embodied in the plan together with other features some of which were accepted and some modified under the terms of the ruling. All of these modifications were incorporated into the Joint Job Evaluation Plan and are part of the current labor agreement. (See Fig. 45.)

2. LABOR GRADES

There are three hundred and fifty-six (356) jobs covered by the Joint Job Evaluation Plan, each job having a different point value and, in theory, a different rate range. From an administrative viewpoint so many rate ranges are impractical for many reasons. It was therefore decided, in negotiation, that all jobs which evaluated within certain specified point ranges would be grouped together so that each job in any one group would have the same rate range. These groupings are called labor grades and, in deciding on their use, the company and the union were following a pattern which is fairly common to all large companies, and were also recognizing the advantages which such grouping offers. Some of these advantages are:

1. Labor grades eliminate numerous wage rates in terms of minimums and maximums.
2. Labor grades eliminate much concern among employees as to "penny differentials" between almost similar jobs.
3. Labor grades facilitate administration.

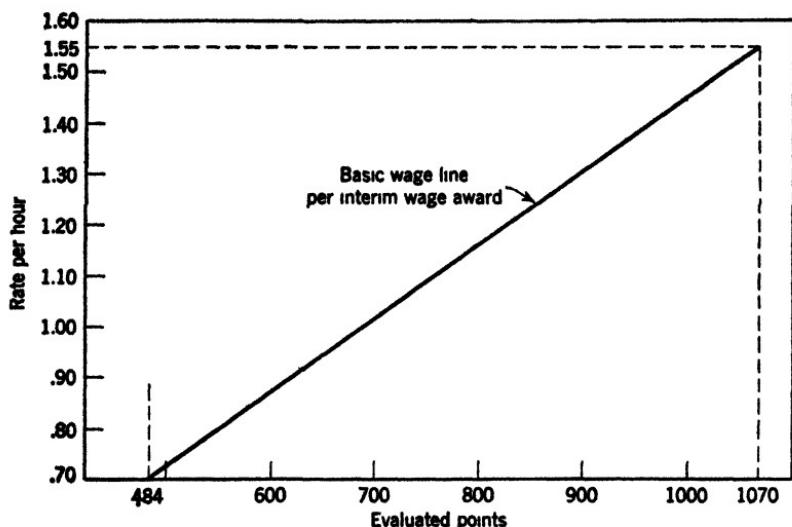


Figure 41. Basic line per arbitrator's award.

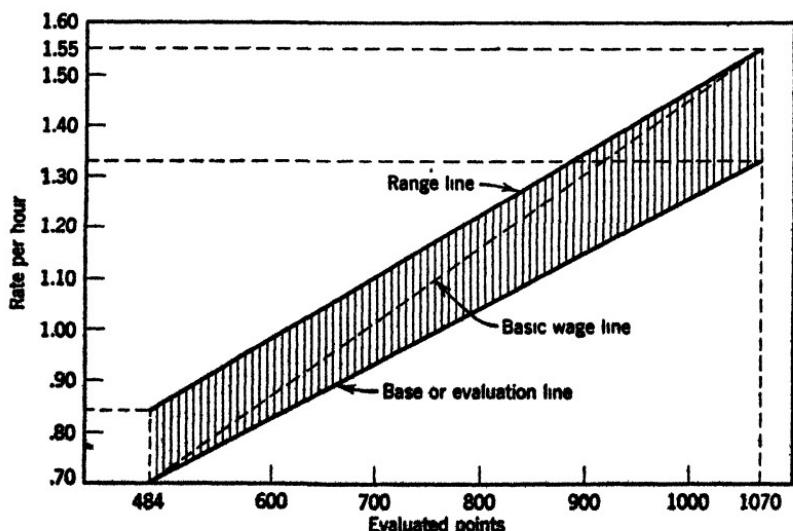


Figure 42. Wage structure developed from arbitration award.

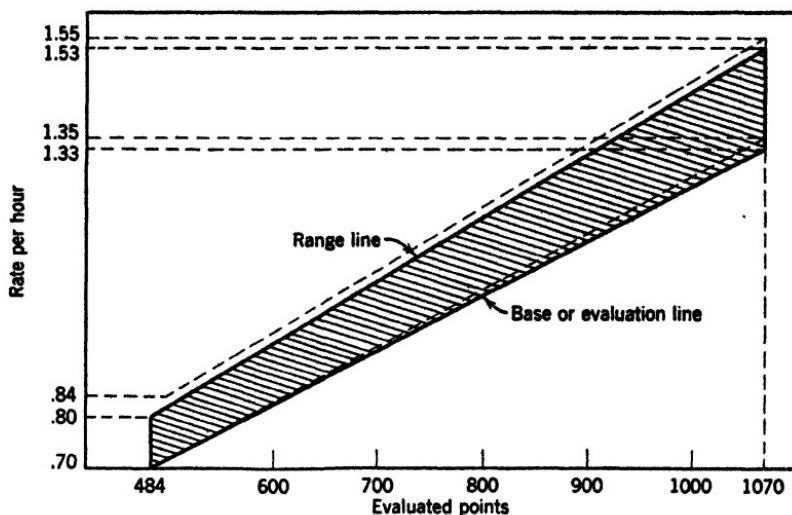


Figure 43. Final adjustment of basic wage structure.

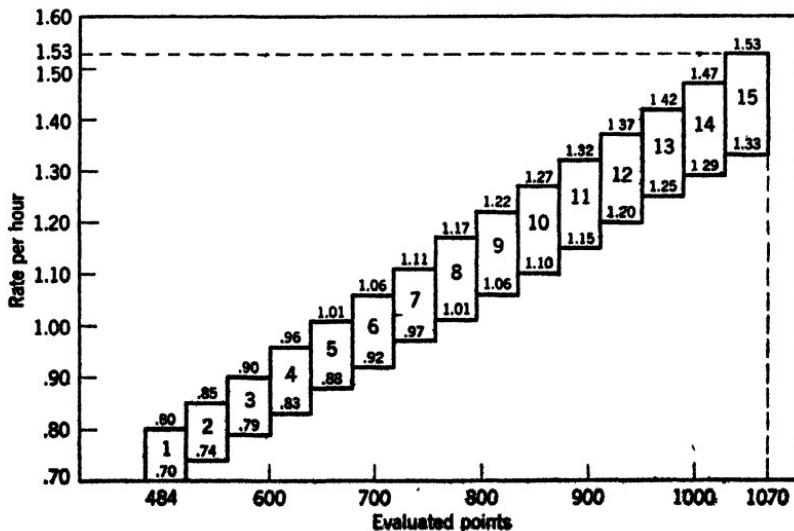


Figure 44. Final wage structure showing labor grades.

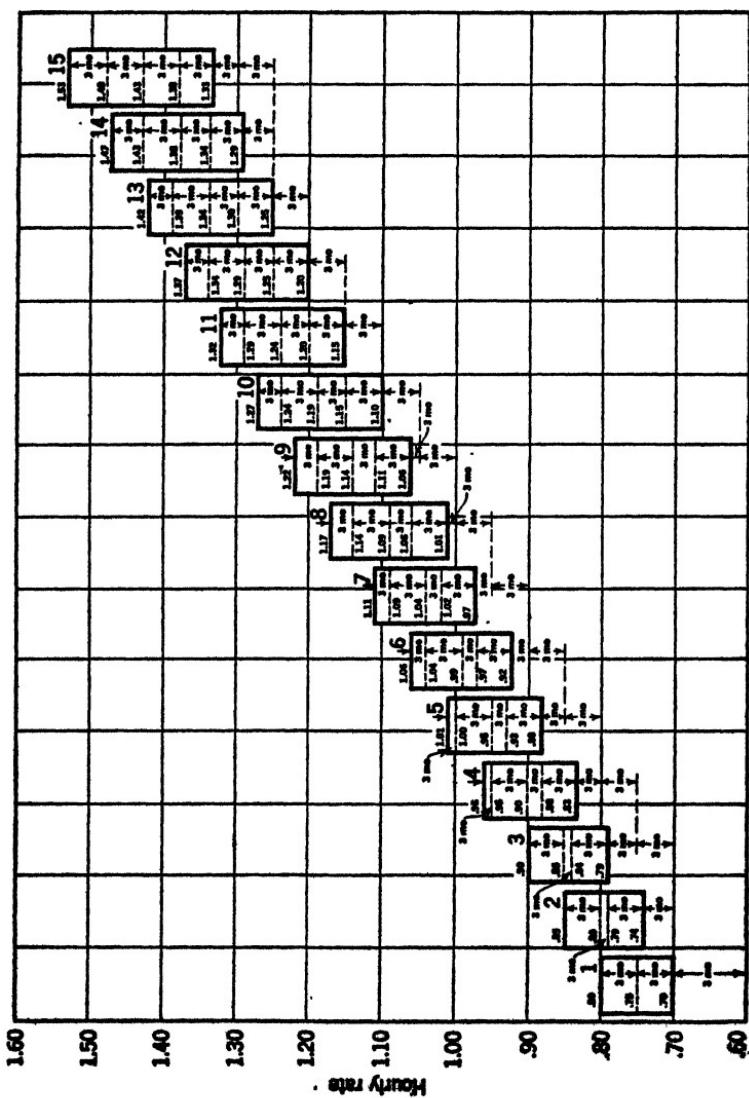


Figure 45. Labor grades showing automatic progressions.

4. Labor grades make it easier to set up progressions that are understandable to the employees in terms of associated or related jobs.

In keeping with the above, fifteen labor grades have been established as shown in Figure 45 [of the present volume]. The point range and the rate range for each of these labor grades is given in the table.

LABOR GRADE: POINT RANGE AND RATE RANGE

LABOR GRADE	EVALUATED RANGE IN POINTS	RATE RANGE IN CENTS AND DOLLARS	
1	484- 524	\$0.70	\$0.80
2	525- 564	0.74	0.85
3	565- 604	0.79	0.90
4	605- 644	0.83	0.96
5	645- 684	0.88	1.01
6	685- 724	0.92	1.06
7	725- 764	0.97	1.11
8	765- 804	1.01	1.17
9	805- 844	1.06	1.22
10	845- 884	1.10	1.27
11	885- 924	1.15	1.32
12	925- 964	1.20	1.37
13	965-1004	1.25	1.42
14	1005-1044	1.29	1.47
15	1045-1070	1.33	1.53

The evaluation of the job determines the labor grade that applies to the job. For example, if a job evaluated to 770 points it will automatically fall into labor grade 8 having a rate range of \$1.01 to \$1.17. Thus the labor grade which will apply to a new job established in the future will be dependent upon the total number of points as evaluated by the Joint Job Evaluation Committee.

3. TRAINEES

The Joint Job Evaluation Plan recognizes the fact that it is not always possible to hire employees with the requisite skill for even the lowest classification in a skilled or semi-skilled occupation. Accordingly, it establishes a hiring rate of 60 cents per hour for all new unskilled employees entering into occupations the nature of which permit their advancement in the occupation as they acquire additional knowledge and skill. Employees in this category will hereafter be classified as TRAINEES within their occupation. For example, a new unskilled employee desiring employment as a drill press operator will be hired at

60 cents per hour and will be classified DRILL PRESS OPERATOR, TRAINEE. As he progresses he will in time reach the lowest classification in his occupation at which time his rate is governed by the labor grade in which his classification falls. The time it will take such an employee to advance thus far and his wage progression from date of hire is explained in detail in the following section on wage progression.

4. WAGE PROGRESSION

Incorporated in the Joint Job Evaluation Plan is a systematized procedure whereby an employee becomes eligible periodically for rate increases within clearly defined limitations. This system of wage progress divides itself into three distinct categories: outgrade progression, ingrade progression, and upgrading, which will be explained in this order.

1. Outgrade Progression. The term "outgrade progression" is used to designate the wage advancement by time periods of new unskilled employees (trainees) from date of hire until they reach the minimum of the lowest classification in the occupation for which they were hired. As outlined above, all such employees are hired at 60 cents per hour and are subject to automatic increases as given in Article _____, Wages, Clause _____, of the Labor Agreement. This clause reads as follows:

All new unskilled employees (except errand boys) shall be hired at the rate of 60 cents per hour, and shall be classified as [OCCUPATION], TRAINEE, and each such trainee shall receive an automatic increase of 10 cents per hour after the first three months (to the nearest quarterly review) of employment and additional automatic increases of 5 cents per hour each three months thereafter to the minimum of the lowest classification in the occupation in which the employee is being trained. As soon as the trainee's rate becomes equal to the minimum of the lowest classification in which he is being trained, he shall be reclassified into the lowest classification in the occupation and will be subject to ingrade progression. The first ingrade progression will take place at the first quarterly review following the employee's reclassification.

2. Ingrade Progression. The term "ingrade progression" is used to designate the wage advancement by time periods of employees whose classification is associated with a labor grade. Employees in this category are covered by the provisions of Wage Clause _____, which reads in part as follows:

Ingrade progressions between the minimum and the mid-point of the ranges established for each of the labor grades shall take place and shall be effective at the regular quarterly reviews, at which time each employee whose wage rate shall be below the mid-point of his rate range shall receive an automatic ingrade increase of 5 cents per hour or the difference between his wage rate and the mid-point of his rate range,

whichever is less. Ingrade wage progressions for employees at or above the mid-points of their respective rate range shall take place and shall be effective at the regular quarterly reviews (the first of such reviews to take place at the quarterly review following the review at which the employee reached the mid-point of his range), at which time such employee shall receive an ingrade increase of 5 cents per hour or the difference between his wage rate and the maximum of his rate, whichever is less.

3. *Upgrading.* The wage clause referring to upgrading reads as follows:

An employee who has reached the maximum of the rate range for his classification will be reviewed by his supervisor at the next quarterly review following his attainment of such maximum rate and will be eligible for upgrading if

- (1) Work exists for him in the higher classification, and
- (2) The employee is qualified to perform the work of the higher classification.

An employee upgraded to a higher classification will receive the minimum rate of that classification or the rate received at the time of the upgrading, whichever is higher. An employee will be eligible for an ingrade increase within his new classification at the next quarterly review following his reclassification. Any employee upgraded to a higher classification shall be considered to be on a trial basis in his new classification for a period of one month, and, in the event of unsatisfactory performance during this period, may be returned to his former classification and rate at any time without recourse by the union or the employee.

The principle of seniority shall apply to promotions and upgradings when knowledge and ability as between individual employees is relatively equal. Upgradings shall not be on an automatic basis but shall be based on the criteria set forth in the paragraphs of this section.

4. *Withholding of Increases.* An increase to any employee whose rate is subject to ingrade progression may be withheld if the employee has failed satisfactorily to perform his job, so that in the opinion of the company the employee is not deserving of the increase which he would ordinarily receive. The procedure in such a case is outlined in Article _____, Wages, Clause _____ of the Labor Agreement:

... unless in the judgment of the employer he has failed satisfactorily to perform the job. In the latter case, the employer shall immediately notify the employee and the union in writing that the increase will not be granted and the reasons for withholding it. If the employee is not satisfied the matter will be dealt with in accordance with the regular grievance procedure. If no grievance is lodged within one month from the date of the written notice, the union and the employee shall be deemed to have acquiesced in the action of the employer.

CONCLUSION

The immediate benefits which will be derived from the Joint Job Evaluation Plan are already known. Of equal significance however, is the fact that the relationships between jobs established by the plan remain unchanged so long as job content remains the same. In other words, any change in the national economy which might necessitate an upward or downward revision trend in wages can readily be accomplished by raising or lowering the wage line [Figure 45 of the present volume] and readjusting the labor grades, thus leaving the relationships between jobs unaffected.

The Joint Job Evaluation Plan represents a complete departure from the company's past wage policies. Therefore, it is expected that many questions will be asked in regard to the various features outlined in the preceding pages. Because of this, foremen and supervisors are requested to note all questions which they may receive, or which they themselves have in mind. By submitting these questions in writing to the salary and wage analyst in your respective plants, it will be possible to make the answers available to all.

13. SELLING THE IDEA OF JOB EVALUATION

JOB EVALUATION gives tangible results, but the processes by which it is developed are intangible. Intangibles have been and probably will continue to be one of the most difficult of all commodities to sell. Salesmanship in job evaluation begins the first time it is mentioned by either management or employees as a possible solution to wage problems. It is said that salesmanship is involved because only in rare instances do both parties to the negotiations fully realize the potentialities of evaluation. Lack of knowledge on the subject by one party, therefore, forces the group promoting job evaluation to attempt high-pressure salesmanship.

Even though job evaluation procedures have been generally recognized as having an established place in wage negotiations, there are those who would attempt to indict it. The author cannot agree with those persons. If there has been any failure, it has not been a failure of the basic fundamentals of evaluation, but the failure of management to present the idea correctly to employees and supervisors from the top to the bottom levels. Management so often makes the mistake of thinking that just because it has in job evaluation a fundamentally fair device for arriving at approximate compensation for services, that employees, union representatives, and supervisors will immediately accept any job evaluation plan. While most executives have not failed to appreciate the need for doing a better job of selling, not many of them have been trained to do the work; and some few may even feel that selling an evaluation program is unnecessary. That task, they reason, is committee work.

Job evaluation is no different from research, engineering, manufacturing, sales, finance, or any other phase of industry, inasmuch as people do not like to change their habits, be-

havior, or even their methods of thinking. Any new program introduced to any of these major divisions of a business stands less chance of failure than the introduction of a job evaluation plan. Why less? Because evaluation work is much closer to the individual than a change in a manufacturing process, a new cost control system, or a new sales approach. Evaluation work determines the amount of compensation an individual receives in relation to all other jobs in the wage structure. Even the most sluggish of thinkers realizes that, in the final analysis, men must be identified with the worth of jobs.

Airplane navigation requires precision and other delicate instruments as guiding or directing devices. Accurate navigation requires a fixed reference, such as a star, the sun, or objects on the ground with which the direction of a plane may be compared. For example, an instrument known as a directional gyro affords the only fixed directional reference within the cockpit upon which the pilot can rely when outside visibility is obscured. Another instrument called the gyro-horizon provides a fixed reference for maintaining flight control under "blind conditions." There is no substitute for visual reference in the manual control of the airplane. Unless the pilot can use his sense of vision to determine the position of the plane with respect to the horizon, his sense of balance is confused and his special orientation is inaccurate. Even birds are unable to fly normally when blindfolded, but flutter helplessly to the ground. By means of a miniature outline of an airplane and a gyro-actuated horizon bar, the gyro-horizon shows the pilot what he would see outside the plane—that is, whether the plane is banking, climbing, or flying level.

The analogy of instrument flying to job evaluation is not too farfetched. Executives are often so very close to wage structures that they can not see what is going on about them. There is no doubt but that persons responsible for wage structures are constantly encountering faults and conditions equal to or worse than the blind flying of a plane. Cross winds, high-pressure areas, and zero ceilings are encountered in

every business. To those executives to whom has been delegated the responsibilities of developing and maintaining proper wage structures there is a real need for some guiding device. Guiding devices in wage structures are like precision instruments in navigation inasmuch as they are often useless and in some instances actually dangerous unless used by competent navigators. The guiding device called job evaluation used by both union and management cannot be left to those who are unskilled or uninstructed in its use.

If job evaluation is one of the approaches in developing and maintaining consistent and equitable wage structures and does have all the merits attributed to it, why then is any further effort necessary? If the program must be sold, then are not all problems present which would be considered in selling such as advertising, sales promotion, sales policy, and sales resistance?

Points of Sales Resistance

Analysis of the sales problem in evaluation would indicate that sales resistance would be encountered. Knowledge of this fact would lead one to want to know where the resistance might be expected. Resistance might be expected to center about employee opposition, but experienced evaluators have found that points of resistance to job evaluation programs are generously scattered throughout the average organization. The five main points of resistance are:

1. Resistance of employees.
2. Resistance of supervisors and foremen.
3. Resistance of union stewards.
4. Resistance of the joint job evaluation committee.
5. Resistance of management.

Each of these groups is capable of exerting tremendous pressure, either deliberately or unconsciously, on any contemplated or existing program. Each group has vastly different reasons for resisting. Until these resistances have become neutralized or brought under control, it is dangerous to pro-

ceed further. The nature of the group resistances which must be met and countered can be better understood by discussing them.

1. RESISTANCE OF EMPLOYEES

Employees of the post-war period must be considered individuals who are informed, enlightened, and aware of their place in the world. Their knowledge and understanding of current political and economic trends amazes even the most cynical member of the management group. This ability to grasp and understand daily happenings developed to such a degree in the decade 1934-1945 that it has no comparison for any equal period in the history of American labor. Radio, unionism, trade papers, and union publications have tended to force wage earners to an understanding of the connection between their own wages and their employer's wage structure and local, national, and even world conditions. How different is the modern industrial employee compared to the small-town mill hand who for years never interested himself in any other wage levels than those in his own community.

Employees can understand, and generally will go out of their way to understand, anything that is beneficial concerning compensation if the program is presented to them in a proper manner. However, let no one feel that the actual selling process is a mere routine necessity, for when dealing with alert, informed people dynamic methods must be used. Selling to groups means selling to the masses, and mass approval of a new approach to the proper determination of wages is not elementary salesmanship.

Employees must be sold on the basic principles. Employees react in various ways when they realize that management contemplates altering or changing existent wage structures. Unorganized employees being unable to do much except listen to the proposal, usually are informed of the basic changes or alterations by their foremen or certain individuals in whom they have placed their confidence. All too fre-

quently new wage plans have been introduced without proper explanation or with explanations which were far beyond the average employee's comprehension. That job evaluation is in no way connected with any kind of incentive plan can not be overemphasized. If the employees are organized the dissemination of information should be handled by their own unions and stewards. This can be done in such a way as to instill confidence and a desire to explore the possibilities of the proposal.

Whatever the initial approach, whether by public address systems, circularization, or meetings of small groups, all of the resistances mentioned in this chapter should be discussed with employees, even though further educational work must be done in addition. Employees must know at the start that jobs and the contents of each job remain the key issues, while personnel, with its Mary Smiths, Jim Whites, and Joe Browns, are in the background. Sometimes employees become panicky at the thought of the employer using a new device to measure the worth of a job they have done for years. A systematic revelation of basic principles will in most instances allay employee fears concerning the fairness and soundness of the program. Too much, however, should not be attempted in the initial stages: employee indigestion of basic job evaluation principles may be a serious attack, not to be treated lightly. (See Figure 5.)

Employees must be convinced that their job evaluation committee is competent. It is particularly important that the individuals nominated for committee work enjoy the confidence of the employees whom they represent. Employees in certain departments may be disappointed to find that some one of their number was not named to the committee. Of course, representation for every department is sometimes incompatible with the advantages that accrue by having a small workable committee. Unrepresented employees should be assured that some one or more persons on the committee are adequately informed of the conditions in their department or departments.

Employees must realize that an evaluation program is not a remedy for all wage ills. Employees must be made to realize that an evaluation program is developed for long-range benefits, and that it is not a new device which differs only slightly from blanket-increase wage adjustments. All employees will not receive financial benefits from job evaluation, and this point must be made clear at the very beginning. It is wise to clarify this issue at the start rather than to be confronted later on by disappointed employees who will insist that they had been misled during the earlier discussions of the proposed program.

Employees must be convinced that they will participate in the program. No matter how good a program has been devised and how excellent the committee, each employee will still desire to know what methods are to be used and to have at least a small voice in some part of the program. Each employee rightly feels that he knows more about his own job than anyone else. He realizes that while he may not be talented in expressing himself, nevertheless he wants to be heard by someone who can properly record his thoughts on the requirements of the work to which he is assigned. Experience has shown that the employee does not particularly desire to be saddled with the responsibility of writing detailed job descriptions, but rather would like to be in the position of "auditing" job descriptions relating to his work. The employee who is assured that he will be given such an opportunity to express himself will usually contribute information of some value to the program. It therefore becomes necessary to convince all employees that they will play an important part either directly or indirectly through their committee representatives.

Employees must be kept informed of committee progress. Most joint job evaluation programs are launched with great publicity to help expedite the work. Employee publicity of this nature always tends to leave some employees confused and, if not confused, at least impatient to see the results. Job evaluation takes some little time to do, and the committee

must be careful that "evaluation silence" is not construed as lack of progress. The committee must assist from time to time in keeping the employees informed of the status of its work by means of regularly issued notices or bulletins. It is not particularly reassuring to employees to know that the program is "half-done," or that "All will be finished in three more weeks." It is not at all unusual for employees to be interested in the actual details of the work. When they are interested the committee should be more explicit in their progress reports. Statements such as "We have just completed the development of the job evaluation manual we are going to use for a yardstick," or "We have just tested the manual by actually evaluating some of the more common jobs," will satisfy even the most genuinely interested employees. If the employees are aware of the time estimated for completion of the program they invariably want to know if the work is progressing according to schedule. Who can deny this trait of human nature? Who has not glanced at railroad timetables to check the progress of a trip? The progress of an evaluation program is no different, and employees want to know just where they are in the program and when they will begin to receive its benefits.

An excellent device for assisting in the selling of a job evaluation program is that of inviting selected "guest observers" to the committee room. The employees selected can actually see and hear the deliberations of those persons who are measuring jobs. The cost in money to the company is small compared with the benefits broadcast by the employees who are privileged to watch the proceedings. These observers should be seated in chairs away from the committee table, where they will be out of the way and yet can observe and hear all details of the discussion. If observers are to be permitted in the committee room it should be agreed beforehand that under no conditions are they actively to participate in the proceedings. The program would soon become hopelessly behind schedule were the committee to allow itself to be questioned or forced to detail all of the preceding work

to these casual observers. Often where observers have been permitted to attend meetings it was found that objectors to job evaluation were converted to supporters.

Employees must be convinced that the program will be understandable. There are many underlying reasons for the failures of various incentive plans, but the most common of all has been that employees were unable to calculate their earnings readily. By the same token, to be acceptable any job evaluation plan must be practically devoid of the formulas or charts which so often strike terror to the uninitiated. In short, the measuring device developed in the program must be capable of being used by all employees from the least skilled to the most skilled. Any measuring device can be made complex and difficult to use. Workers like measurements in terms with which they are familiar. In actual production employees measure in inches, pounds, feet, gallons, or tons. Under the same conditions were they forced to measure with the metric system confusion would result. Therefore, the committee should be especially careful in constructing the wording or interpretations of the manual so that there can be no opportunity for anyone to mistake the true intent of the written matter.

Employees must be assured that job evaluation is not an experiment. One of the committee's first duties is to assure all employees that the job evaluation program is not an experiment. The exact pattern of the evaluation is not fixed at the outset and does not shape up until considerable study and planning indicates what is best for the particular plant. However, the general plan and procedures must be shown to the employees. The employees must be told that there are to be no radical departures from those plans which have been proved successful in numerous other cases. While the particular plan that may be finally developed may vary slightly in practice from what has been used elsewhere, nevertheless the basic fundamentals remain constant. For those employees who can not be convinced by ordinary explanations special efforts must be utilized to show them that other well-known

companies have been using job evaluation processes as an aid in creating wage structures.

Employees must be convinced that no individual will suffer a loss in wages as the result of job evaluation. One of the first questions an employee will ask himself when told of a proposed change in wage structure will be: "How does it affect me?" Thus it must be made quite clear at the start that job evaluation is not a specialized form of a cost reduction program. Individuals whose earnings or rates are in excess of the prevailing ranges or rates will be found in all wage structures. Any man will zealously guard his rate and unless the company can give that man assurance that he will not suffer a wage loss in the proposed plan there is little that can be argued for it. Some companies ask if job evaluation has merit why should they not abide with the findings in every case. Such reasoning would mean reductions in rates for those individuals who were being paid in excess of the rates as determined by job evaluation. Unfortunately, such an attitude implies shortsightedness, inasmuch as there are many other ways of correcting such conditions without decreasing any individual rates. The sooner management states that the program will not cause any employee to suffer a rate reduction for the same type of work that the employee is assigned to, the sooner a favorable employee reaction will spread over the plant. These exceptions will cover broad bands in most instances, but for all practical purposes the narrowing of this band should be accomplished gradually. The theoretical wage structure can not be attained overnight.

2. RESISTANCE OF SUPERVISORS AND FOREMEN

Supervisors and foremen must be told that evaluation programs do not strip them of any rights of their prerogatives. They should be shown how evaluation will help them, how they will receive the benefit of the pooled judgment of a group which is competent to measure the requirements of each job. They should also be shown that the responsibilities concern-

ing intangible values which they were formerly charged with will be lessened. No longer will they have to question the wisdom of their own decisions regarding the worth of jobs. Group evaluation or appraisal will supplant individual "guesstimates."

Job evaluation will give foremen and supervisors the advantages of operating under approved job descriptions. Definite limitations as determined by the job descriptions will show them where one classification begins and ends. The former so-called classifications, if they existed, will cease to be the loose intangibles which one day served the foreman's purpose but which came back later to trouble or embarrass him. Without classifications and the accompanying job descriptions no foreman can consistently approximate where the work of tool maker B would end and the work of tool maker A would start.

The group must be satisfied that there are advantages in having fixed ranges, or rates which have previously been approved by both management and labor. It is not to be assumed that job evaluation demands the use of rate ranges for, as has been noted before, evaluation works equally well when applied to pin-point rates. In most plants the trend seems to be toward monetary ranges where incentives are not involved. Wide ranges of as much as 50 cents per classification have made the foreman's part in the administration of wages a difficult one. A wide range, it would seem, would cover all levels of skill for the occupation concerned. Without well-defined limits to classifications, definite beginnings and ends, the foreman will be thoroughly confused in trying to settle fairly the wage questions that come up in his department. The foreman and the supervisors can be shown that once the classifications have become established, employees will no longer have any justification for accusing them of favoritism.

Real salesmanship is involved where job evaluation involves joint employee-management committees, and top man-

agement up till that time has been anti-union. In such circumstances the supervisors would be expected to reflect the thinking of their superiors. If joint action has been decided upon as the best method of getting the evaluation completed, supervision must be schooled into realizing that all former personal animosities are insignificant beside the problems to be settled in the current negotiations. They must be shown that other companies have gone through the same processes and have eventually emerged with wage structures that were equitable in every sense, and that joint efforts can, and usually do, terminate in better evaluations than were the program to be controlled by management alone.

Most importantly, foremen and supervisors must be kept abreast of the program. In the final analysis they are still the people who come into daily contact with the working force. Too many companies have erred in discounting their importance. Often what little information the foreman received concerning the evaluation work was incorrect, and he was left confused or angry because of the failure of management to consider him an actual part of management. The company cannot afford to miss this opportunity to take the supervisory group into its complete confidence. Management can rest assured that in the union councils every member down to the least insignificant steward is kept completely informed on all phases of the work.

3. RESISTANCE OF UNION STEWARDS

In overcoming the natural resistances of the union steward different problems are involved. If the evaluation program is a healthy one, the information usually reaches the union steward from two sources. Both the union and the management usually try to familiarize him with all details.

Since wage rates play such an important part in all grievances, the steward must be sold on the idea that job evaluation will not eliminate or jeopardize his own job as steward. All

individuals seek security of employment. Usually the steward's reward for his services to the union hinges on those clauses in union agreements which give the steward maximum seniority in the department under his jurisdiction. The stewards should therefore be assured that merely because a formalized wage structure is being developed it will in no way reduce the need for union representatives within a department.

Stewards must be instructed by their union that they have certain definite responsibilities to the unit which they represent; it is also their duty to be fully informed on all of the fundamentals of evaluation so that they may be in a position to explain the system or even to evaluate any job that might come to their attention. The average steward can not compete with any member of the joint job evaluation committee when it comes to actual skill in the ability to use the manual, but nevertheless he should be able to get an approximate value for the immediate satisfaction of any employee.

Stewards as well as supervisory employees should also be shown the advantages of having accurate job descriptions. The prime responsibility of a steward is to police the group to which he has been assigned, and to see that all of the provisions of the union agreement are being met. When he has factual data new vistas are opened to him: he can point out possible promotions, or reclassifications, both of which mean wage increases for the employees he represents. Former methods of calling these situations to the attention of management were usually very unsatisfactory, to say the least. The old method of dealing in generalities will, to a large extent, be eliminated. He, too, will no longer be subject to charges of favoritism or politics coming from the very ranks of his fellow union members in his own department. No longer will anyone be able to say that he did not act so as to ensure fair and uniform treatment to all.

4. RESISTANCE OF THE JOINT JOB EVALUATION COMMITTEE

It must be remembered that job evaluation programs are not of such a nature that they can be conceived, developed, and completed in a fortnight. The parties to joint job evaluation plans often try by this means to iron out wage disputes after weeks or even months of negotiations have failed. During that period charges and countercharges may have been hurled indiscriminately or even with deadly accuracy at persons who later were to become members of the joint committee. When previous negotiations of this sort did exist, obviously some of the tempers of those concerned would have been strained almost to the breaking point. Management and labor must unite or fight. No technical or dignified name for fighting can change the essential nature of the relations between management and labor where the issues in dispute are clearly and sharply defined.

Job evaluation processes help immensely in eliminating the "fight attitude," and minimize the thought that "sides" are necessary and of great importance. Before any constructive work is accomplished, "All the horses must be hitched to the same wagon, and all of them must be headed in the same direction." Yet there is a sense in which sides are necessary to achieve the full value of that unity which is so desirable in this type of work. There is always a vast difference between what management thinks is best for the plant as a whole, and what certain individuals located in the various parts of the plant think is best for the plant as a whole, as seen from their outposts. Therefore, co-operative investigation and co-operative responsibility in reconciling some of the inequities of the wage structure under study is needed. This thinking is confirmed by the accepted view that job evaluation should be the concern of experts, managers, unions, and employees.

Some of the strongest resistances to the program arise in committee work. As a whole or in part the committee may

question the ability of the chairman to lead the program to a successful end in a venture which is new to most of the members. The chairman's sense of fairness may be challenged. This situation is especially apt to occur when unhealed wounds and bitternesses are carried over from prior negotiations. Unending tact and diplomacy are a prerequisite to the proper orientation period accompanying the beginning of the program. The committee will naturally listen to a good leader, but that leader must have more than just a fair picture of the course to be followed. It is in the initial meetings of the committee that trivial matters appear as impassable obstacles, and the resistance of the committee often takes the shape of defeatism. Sometimes, when committee members receive the full impact of the details that have to be gone through, their resistance takes the form of a desire to be excused from the work. Such persons should be allowed to resign for they will certainly be a burden to those that are genuinely hopeful that the joint efforts will succeed.

Although resistances of this type can be active and powerful in the starting stages of an evaluation program, the author has never seen resistances occur among committee members in the later stages. Committee job evaluation work always brings about a fuller understanding between the parties, and a deeper respect for the mutual problems to which they have been held accountable.

5. RESISTANCE OF MANAGEMENT

Management must come to agree that possible increases in wages that are brought about by means of evaluation adjustments are not excessive, and, in the long run, make financial sense. All job evaluation programs cost money. It is assumed that the program was approved because there were inequities in the existing wage structure. This meant that peaks and valleys existed in the wage structure and that management was desirous of eliminating them. To correct the

valleys means to increase the rates of some jobs, but to eliminate the peaks would be merely a new form of wage cut. Management must realize that job evaluation is designed for the long-term administration of wages and that it is not intended for the expediency of the hour. Excessive rates are to be handled over a course of years, while sub-rates are to be corrected immediately. Such adjustments can only be considered as an increased payroll expense. There are no "bargain days" or "dollar days" in the terminology of job evaluation. The utilization of job evaluation processes is exclusively reserved for those companies which are genuinely interested in achieving corrective wage measures.

In the course of meeting management resistances, certain representatives of the management should be taken through a refresher course and shown that the wage structure is usually only happenstance, and that little or no study may have been devoted to that phase of the business, or the circumstance which created the practice. Supervisors often accept the wage structure at its face value, giving it little thought just so long as they are enabled to have enough employees to produce the required work. Sometimes rapid turnover caused by unbalanced rates may force them to seek relief from their supervisor. There is a danger involved in such action, inasmuch as when they are forced to discuss wage rates there is a tendency to distort or exaggerate the facts. Often the total effect of such wage determination is even worse than what was originally inherited.

Management often has settled conceptions of the values of certain services and, when faced with the findings of the completed evaluation program, can not become reconciled to the proposed rates. Prior concepts of values may even be so strong as to delay management acceptance of the program until the justice and fairness of the proposed rates are carefully reviewed.

The Selling Process

Each of the five special groups discussed presents different phases of sales resistance which must be met and overcome. No one can predict which one or more of these resistances will or will not appear, or when or where they may be expected to crop up. Elementary textbooks on salesmanship state that in the act of buying a buyer goes through five successive stages: (1) attention, (2) interest, (3) desire, (4) action, and (5) satisfaction. In selling a job evaluation program these same five stages must be considered. If a genuine desire on the part of everyone concerned to determine wages equitably has existed from the beginning, then it can be said that salesmanship as it has been commonly practiced is only quasi-necessary. It is not needed in theory or in fact. What has therefore erroneously been called salesmanship in job evaluation resolves itself into nothing but a generous dose of plain, common, unadulterated instruction, minus all of the adornments which can so easily throw the uninitiated off the true course of the program. The instructional aids that are used will of course depend on the circumstances present in each case. Some of the more common educational aids used in instructing employees are:

1. Publicity through union and company publications (Figure 46).
2. Movies and slide films.
3. Employee letters.
4. Bulletins.
5. Progress reports.
6. Guest observers.
7. Employee meetings.

The committee should try to arrange parallel schooling for foremen, stewards, and supervisors. One of the true tests of the job evaluation committee's ability to transmit the basic fundamentals to the groups is readily determined when the results of each group's schooling is checked. If all who are to work with the evaluation program are actually carried along

SHOP NEWS

JOB EVALUATION: Joint Statement of the Sperry Gyroscope Company and the United Electrical, Radio, and Machine Workers' Union, Local 450

During the month of April, 1943, representatives of the Union and the Company came to agreement with the Mediator, Professor Hayes, on matters��nly affecting the welfare of hourly paid employees. This agreement was signed by the Company and the Union representative and was subsequently ratified by the Union membership. Paragraph No. 4 of that agreement reads as follows:

"A Committee, consisting of representatives of the Company and the Union, shall be appointed by the Company and the Union to evaluate the job descriptions of all hourly paid employees according to the system devised, and to submit recommendations for new job descriptions or changes in existing ones.

The Joint Job Evaluation Committee was formed upon the above authorization contained in that agreement. Four of its members were appointed by the Company and four were elected by the Policy Committee of the Union from Union membership.

It is the function of the Joint Job Evaluating Committee to plan, develop and execute the Job Evaluation Program. The Company committee to pursue the objectives impartially to the best of its ability, and the Union committee to do likewise. The Committee has no authority to make recommendations concerning any individual's rate or compensation.

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For each characteristic or condition, a series of definitions is presented. It is the function of the Company committee to evaluate the job descriptions of all hourly paid employees in accordance with these definitions and to submit recommendations for new job descriptions or changes in existing ones. The following is a typical example of a characteristic and corresponding definition:

Characteristic Working Conditions

- a. Burrowing
- b. Burrowing
- c. Conditions where dusting, influence such as dirt, oil, grime, or smoke are present to a negligible extent (normal temperature)
- d. Conditions where dusting, influence such as dirt, oil, grime, or smoke are present to a negligible extent (normal temperature)
- e. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- f. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- g. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- h. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- i. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- j. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- k. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- l. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- m. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- n. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- o. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- p. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- q. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- r. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- s. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- t. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- u. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- v. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- w. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- x. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- y. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent
- z. Conditions where burrowing, influence such as dirt, oil, grime, or smoke are present to a negligible extent

Figure 46. Example of management-union publicity for job evaluation program.

with the program instead of being kept in the dark until the committee decides to unveil its work, the ultimate reception of the plan will be smoother. Fewer wrinkles will have to be ironed out by practical application. As the stewards and the foremen will have the responsibility of maintaining the wage structure they should acquire some experience prior to the time they are called upon to operate the plan.

Job evaluation is not new, it is merely the integration of the combined judgments of individuals qualified to make appraisals of job worth. Education of all groups or individuals means that those who would sponsor job evaluation must eliminate the mumbo jumbo from the procedures, and treat the subject with the simple fairness and honesty for which it stands.

14. AFTER JOB EVALUATION—THE NEXT STEP

INDUSTRIAL RELATIONS DIRECTORS of today need make no apologies for any inability to foresee the precise nature of the economic and social changes which are to come. Change will come with change, and plans can only be based upon assumptions about the conditions which will affect every person who works for a living. Will these conditions be entirely different from those with which the worker is now familiar? There are a number of persons who believe radical changes are in the process of developing. If such is true, then industrial leadership of a high caliber will be necessary to guide both management and labor through the rough waters ahead before industry will be permitted to enjoy the comparative calm of a newly found industrial democracy.

The need for joint labor-management evaluation committees has always been a controversial point. But disputants have often missed the real heart of the question, which is that an orderly approach to the problem of wages is one of the crying needs of industry.

Time will pass by, and the evaluation programs which have been established and have acquired necessary changes from time to time will finally become acceptable to the doubters in both management and industry. Experience has taught industry that continuity of development must be a dynamic and ever-continuing process. The surest way to produce inferior job evaluation procedures is to regard the developed plan as the final achievement, discourage group participation directed toward revision and maintenance, and prevent wholesome improvements.

Refinements and improved techniques resulting from the meeting of many minds will improve evaluation processes as

practiced today, and the mellowing influences of employee acceptance and understanding will make the major portions of evaluation work usable.

The vast majority of those evaluation programs which have failed to win both company and employee acceptance have failed because of lack of continuity. The evaluations determined were the result of the pooled judgments of men qualified to appraise tangible jobs. The jobs were clearly definable at the time of the evaluation, or else values could not have been set. No one person or a committee can evaluate a ghost job. A number of the job evaluations have failed because it was assumed that job contents did not change. Close study of many thousands of jobs shows that with but few exceptions all jobs are in a constant state of change, even though the rate of change may vary widely in different or the same occupations. If job contents are changing at non-uniform rates inequalities slowly begin to create employee dissatisfaction. It is doubtful if there are many who have reached supervisory levels who have not seen the failure of a system, the loss of popularity of a procedure, and finally the actual abandonment of a certain method of doing things. Why must these systems and procedures fail? Of course there are many good reasons but usually in the final analysis the cause can be found in lack of employee acceptance. Management has in the past paid fees measured by millions of dollars to purchase systems which were supposed to eliminate the weaknesses at the time of installation. Often such systems have been purchased in much the same manner as raw materials or sub-contracted parts have been purchased.

Industry can not expect to buy a system for determining the wage rates of its employees and then expect that system to serve the company needs without further care and maintenance. Most industrial executives have at some time or other had experience with bought systems. They can easily recall the occasion when company officers were "called into conference" to hear the outside engineers submit their report

on the plan or system they proposed to install. The next thing they heard was that the job had been completed and the installing engineers had left. The momentum of the installation carried the program forward until the old under-currents engulfed the new program. Such programs were not constructed on a sound basis, and the principle of continuity had not been assured by the builders. To provide for the future as well as for the present is a direct obligation of those that administer. In job evaluation those who start a program must provide means for changes and also for the continuation of such activities as are necessary for the broad application of the plan. The plan must be flexible, which means absence of rigidity. Therefore, a flexible program-continuity implies both a giving-in to pressures actuated by actual and legitimate changes and a springing-back to the original position when corrections have been made.

In the early 1940s a detailed study * was made of some three hundred labor agreements of representative companies to determine if the numerous job evaluation programs had left an imprint which could be considered as separate and distinct from the usual wage clauses. The results were disappointing. The findings showed that there was almost a total vacuum in a place where one would expect to find progressive thinking. In a number of the agreements, where it was known that the wage structures were based on some form of job evaluation, no mention was made of provisions designed to ensure the continuity of such programs. It can only be suspected that in those cases the evaluations were made as a temporary expedient to assist both management and labor to circumvent the watchdogs of government, the stabilization boards which at that time attempted to control wage structures. Companies which were guilty of such practices are due for a rude awakening for failing to realize that evaluation programs require maintenance. Without proper maintenance, an evaluation program that may have been considered to be function-

* Appendix D.

ing smoothly may become an unmanageable burden which may even threaten a company's stability. There is no such thing as a dormant job evaluation program.

If a job evaluation plan fails to achieve the acceptance of both management and labor after a genuine effort has been made to provide for the continuity of the program, then it must be self evident that the program lacks merit, and accordingly is not worthy of perpetuation. Such conclusions might well lead one to believe that the mortality rate of job evaluation programs is high. Closer investigation will show that the high percentage of failures applies only to those instances which definitely prove that a lack of foresight in program continuity was the principal cause of failure.

Another class of job evaluation program failures is those programs which were hastily constructed without benefit of persons qualified to do the work. The rising tide of job evaluation popularity has seen an increasing number of job evaluation consultants. In some of the larger industrial areas the self-styled experts have taken advantage of management's all-too-common ignorance of this phase of industrial relations. Sometimes restrictive government agencies have given lip service to their efforts, and management and labor alike have submitted to third-class evaluations in a desperate attempt to get some sort of wage structure other than the one with which they are saddled. Most of such installations will have to be completely redone, for the opportunities of salvaging sufficient parts is not particularly good. The history of such cases only confirms one of the basic principles of consulting work, that a wage consultant ought to diagnose the case, specify the treatment, and leave the administration phases to the resident manager or his representative. In all fairness it must be stated at this point that there are a number of reputable consultants in this field who are qualified to solve the problems of job evaluation.

Conclusion

The vision of an all-encompassing method of establishing industrial wage relationships has grown steadily in the minds of many individuals. By means of discussions and articles these same persons have attempted to inject refinements and accessory utilities into basic methods until there is danger that confusion may turn into controversy.

Job evaluation did not develop from any one specific industry or company. It was the direct result of management demands for factual data when wage negotiations suddenly swamped industry in the hard-pressed years of 1937-1945. During those years the artificialities of past concepts of wages collapsed and evaluation processes, as no other, seemed the only solution. Job evaluation was one of the stabilizing influences in the industrial relations departments which attained their full majority during the same period. It stands before us today as an example and a warning—and demands that all of us help to clear up the many false conceptions to which it has given rise. Let all courageously treat it with the simple fairness and honesty for which it stands.

There are many individuals who, for one reason or another, are unable to believe in or who can not conceive of this specialized type of negotiation, but who nevertheless admit that from a practical sense the results of evaluation have satisfied millions of wage earners. To those people the author would say that new methods are not created instantly. As a matter of fact, the true benefits of evaluation often become distinct only after an interval of years. In the fast-moving thirties and the war years industry was carried along by a swift surge of events and orientation at all times was not possible. Only when we are able to contemplate these events objectively can we judge the new methods that these years developed.

Whoever works hard for, strives for, and desires that an equitable determination of wage relationships shall be their

primary goal, is above partisanship. Whoever does otherwise belongs either to labor or to management. That is the foundation upon which job evaluation is built. Basic principles must not be stretched to fit the seemingly important but selfish desires of the moment, or be exposed to merciless attacks arising from unfinished ideas generated by the "efficiency experts of the wage round-table." Nothing in this book is intended to convey the thought that it is impossible for either management or labor representatives so to condition themselves as to become capable of doing good evaluation work. Only when individuals enter into such a program with biased intentions will they hamper the development of job evaluation, which gives promise of an era of industrial peace.

APPENDIX A. JOB EVALUATION AND THE DEPARTMENT OF LABOR: UNITED STATES CONCILIATION SERVICE

**U. S. Department of Labor
United States Conciliation Service
Washington
25**

Mr. John R. Steelman, Director
U. S. Conciliation Service
Department of Labor
Washington, D. C.

Dear Mr. Steelman:

The United States Department of Labor receives numerous requests for information or assistance on matters relating to the promotion of harmonious and sound relations between Labor and Management. High on the list of inquiries received by the Department is that for information regarding the subject of job evaluation. Especially has this been true since the beginning of the present war.

The increase in the Nation's industrial employment, and the resultant increase in personnel and production problems has multiplied the requests for these data.

These requests indicate the necessity for more information on job evaluation, not only for our Commissioners of Conciliation, but for certain other parties who are vitally interested in this subject.

It has been requested that we prepare such a bulletin for distribution in order that the Department may better serve Labor and Management. This bulletin contains an explanation of job evaluation and the work of the Technical Division of the United States Conciliation Service in connection with job evaluation.

In preparing the bulletin the writer has had the able assistance of Russell E. Stone and Ralph R. Williams, of the Technical Division.

It is suggested that this bulletin be made available to our Commissioners of Conciliation.

Respectfully submitted,

[signed] Walter C. Taylor
Chief, Technical Division
U. S. Conciliation Service

November 15, 1944

**U. S. Department of Labor
United States Conciliation Service
Washington
25**

Office of the Director

To All Commissioners of Conciliation
United States Conciliation Service

Dear Commissioner:

It is our desire, as you are aware, to keep our Commissioners of Conciliation as fully informed as possible with regard to the various subjects pertaining to labor relations.

One of the most important of these today is that of job evaluation.

The Technical Division has prepared and submitted to me a bulletin on that subject. This bulletin is being forwarded to you for your information, and I trust you find it to be helpful.

Sincerely,

[signed] J. R. Steelman, Director
U. S. Conciliation Service

November 15, 1944

JOB EVALUATION *

Ever since man began to sell his labor the question of wages has presented a problem to both the employed and the employer. However, only in recent times has the problem of wages been approached by both parties through collective bargaining. The worker of antiquity had no voice in the determination of his return. This was fixed by decree. Even in the Middle Ages the numerous wage regulations predicated upon a "just" return permitted the apprentice or journeyman no voice in his wage. The problem of wage determination up until the Industrial Age was to a large extent solely one of fiat or decree vested in a master or regulatory body.

With the advent of the Industrial Age the market—i.e., supply and demand—began to play a part in the determination of the wage earner's return. In more recent times collective bargaining and wage legislation have influenced but not changed fundamentally the effect of the market upon wages; they have, however, given more voice to the worker's conviction as to what the wage should be.

The mechanism of the market, the existence of wage legislation and regulatory bodies, and the influence of collective bargaining are now well-recognized agencies in the matter of wage determination, but these have not been sufficient to prevent the inconsistencies and inequities which appear in present-day wage structures. A genuine need exists for some device by which the agencies of supply and demand, collective bargaining and legislation, may be utilized more effectively to create a sound and defensible system of wage determination.

Largely because of the perfunctory attention given to wage administration in general and the absence of a tested method of wage determination, the job and wage structure of numerous companies and industries reflects the growth of inequities which have encouraged in a large part by the day-to-day stresses of such items as consideration of length of service, transfers without rate adjustment, the absence of standard hiring rates, favoritism, and the practice of letting the foreman arbitrarily judge the value of an operation and the worth of an employee.

In addition to these items, which occur chiefly at the departmental level, are such general considerations as arbitration awards, percentage increases, wage legislation, the market, and more recently the wage stabilization policy of the National War Labor Board.

Both labor and management have expressed a growing concern with the inconsistencies being created by these and other related items in wage structures, and are increasingly marshaling their resources to cor-

* Bulletin prepared by the Technical Division, United States Conciliation Service, Department of Labor.

rect the wage problems by developing or utilizing several methods of systematic wage control.

Job evaluation is one of the most highly developed of the various techniques used to measure the relative worth of jobs and is being increasingly looked upon as the best solution to the problem of wage determination. It provides labor and management with a yardstick to measure all jobs within a company; assures that all jobs receive the same consideration; is the means of determining the worth of a new or revised job; establishes a logical relationship between jobs in the separate divisions or departments of a plant; and eliminates as far as possible the sources of irritation caused by inequalities and inconsistencies.

Job evaluation is essentially the study of the content of each job, without regard to personalities, to establish objectively the relative worth of one job to another within a given plant. It is, in other words, a yardstick by which each distinct job in a plant is methodically analyzed to establish its position and relations to all other job-rungs on the occupational ladder of the company.

The scope of evaluation in general has been on a company or plant-wide basis. Several practical considerations have contributed to this development. Familiarity with the occupations, requirements of the jobs, and the varied rates of pay have served to fix the attention of labor and management upon their own situation. The general unreliability of job nomenclature and the lack of standard titles describing jobs of similar content have brought forcefully to the attention of labor and management that a great deal of co-operative work must be done before industry-wide evaluation may be successfully accomplished.

Within the scope of a company or plant job evaluation has been applied mostly to the "wage earning" occupations, such as those jobs paid on a straight day rate or on an incentive basis. Clerical and administrative jobs have also been evaluated. However, evaluation of this group usually requires a method different from that of the production group, although the principle is the same.

Numerous plans of job evaluation are currently being used by labor and management. In most instances the plans adopted fall under one of four general methods of evaluation: job-ranking, predetermined grading, point rating, and factor comparison. In some instances a plan may be a combination of two or more of the general methods. Frequently the method of evaluation may be a modification of a recognized and tested plan. In this connection an analysis of a large number of existing manuals reveals a similarity to certain widely used plans and also indicates that manuals, where they are a part of a plan, usually have been modified to fit local conditions. Whenever an engineering firm is employed, its own plan or manual is generally adopted.

Any specific system of job evaluation is best understood by a study of its manual, or yardstick, as it is frequently called. Sometimes the manual or plan is detailed, listing characteristics common to jobs in the industry. On the other hand, it may be fairly simple, especially when the jobs as a whole are ranked or graded.

The manual may be composed of a number of factors ranging from four to forty. As a rule, however, most manuals possess from five to fifteen factors which are essentially segments or basic characteristics to be found in the majority of jobs in any given company. Common to most manuals are five basic factors: experience, effort, working conditions, responsibility, and skill. Where a larger number of factors are found, the basic factors usually have been subdivided. The factor of responsibility, for example, may be broken down into such sub-factors as responsibility for equipment, responsibility for material, and responsibility for the work of others.

Each factor should be defined not so much from the standpoint of dictionary accuracy as from the standpoint of establishing down-to-earth criteria by which the evaluators may be guided. It is essential that the definition of factors be composed of easily understood phrases which mean what they say. Preparing factor definitions may be difficult when it is desired to produce a manual measuring the relative worth of production, clerical, and supervisory jobs. Among these occupational groups exists a diversity of job content which is difficult to cover adequately with one exclusive manual. For this reason, where a manual is a part of the plan, it has been more advantageous to adopt or develop a manual measuring only one occupational group.

The correct distribution and assignment of weights to the factors are important to the success of an evaluation program. Consideration should be given to the nature of the industry, close examination being made of job conditions and work requirements inherent to the industry in question. Analysis also should be made of weights allotted to related factors in manuals of other tested and tried evaluation plans. If the problem has been faced squarely and studiously and the weighting then is the result of pooled judgment and sound thinking, the stigma of arbitrariness very likely will be avoided.

When the manual has been developed and adopted and the factors defined so that the evaluators understand and recognize what is to be looked for, a concise, complete, and "clear-cut" job description should be prepared for all jobs agreed upon as being separate and distinct.

A typical description usually includes a job summary, which is a brief résumé of the entire operation, and a job detail, which is a detailed breakdown of the task. Such a description may be made by listing the job elements from beginning to completion of the task, or, depending

upon the nature of the job, by describing the general over-all routine of the operation. For example, description of a punch press operator should list the elements of the operation from the time the tote box is secured until the piece leaves the operator's hands, while the descriptions of a millwright should list only the general routine performed; otherwise, the large number of tasks and variety of detail would unnecessarily fill several pages of description.

There is no substitute for good job descriptions in evaluation. Not only do they provide a record of the important details of the job, but they serve also as a means by which those who are preparing the evaluation may secure a thorough over-all familiarity with the work characteristics of each operation to be analyzed. The advantage of this may be more easily understood when the problem of having to evaluate 200 jobs or more is recognized. Only after critical discussion of each characteristic will the parties have gained a detailed knowledge and evaluation attitude which is necessary before the final analysis and the rating of the job is ready to be done.

The objectives and principles of job evaluation have been discussed without attempting to explain the various procedures used to install an evaluation program. In many respects the evaluation procedure is one of the most important phases of the program. The desire to correct the wage structure through evaluation must be complemented with competent personnel and sincere effort. Haphazard analysis of the situation, poor planning, and tepid interest, individually or collectively, will defeat the best of evaluation programs.

An evaluation system may be installed either by the management without the participation of labor, or jointly by labor and management. When management initiates an evaluation, it either utilizes members of its own staff, preferably from the engineering or personnel departments, or secures the services of a private engineering firm. The engineering firm may provide the staff required, or it may direct and assist management. In instances where the participation of labor is not provided for when the evaluation is undertaken, management may put the program into effect immediately upon completion of the job, or it may submit the plan to the employees or their representatives for consideration.

Obviously there are many dangers inherent in any procedure of evaluation, regardless of the plan's merit, if it is imposed upon the workers without their consent and understanding. Especially is this true of evaluation where the employee's wage rate is affected. If any change in rate results from the evaluation, the employee should fully understand the reason for the adjustment; otherwise, there will exist a sus-

picion that the job has been tampered with, and even though the rate may have been raised, that suspicion remains.

Also to be considered is the fact that job evaluation is not an exact science. It is a methodical technique of reducing a highly personal question to a level where it may be discussed and analyzed as objectively as possible. It focuses the attention of reasonable individuals with reasonable differences of opinion upon a defined particular, and reduces the area of difference first to the extent of what is ruled out, and second, to the paucity remaining to be analyzed. Since it is a method of exacting forcible and consistent judgments, it is exceedingly important that the assistance and reasoning of those affected be solicited and recognized. When this is done, labor and management will have followed a first principle of job evaluation.

When there exists between labor and management a sincere desire to correct the inequities and inconsistencies in the job and wage structure, the appropriate step should be to establish a committee composed jointly of labor and management to study the problem confronting them and to make a report to both parties concerning the feasibility of undertaking an evaluation program. If the committee agrees to evaluate the jobs, it should recommend:

1. An appropriate job evaluation plan.
2. A policy of procedure setting forth:
 - (a) The organization of an evaluation committee.
 - (b) The authority of an evaluation committee.
 - (c) A general formula for the adjustment of out-of-line rates.
 - (d) An outline for the maintenance and administration of the evaluation program.

The evaluation committee should then be formally established and the work undertaken.

The evaluation committee should be composed preferably of no less than four and no more than eight voting members equally representing labor and management with the stipulation that the committee may request such consultants as necessary. Provision may be made for "floating" members in order to secure additional spot information at the foreman and steward level.

After an evaluation plan has been adopted and the evaluation committee set up, one of the first phases of the work to be undertaken is that of writing descriptions of the jobs that have been decided upon as being distinct. These job descriptions may be written by the committee itself, or this work may be assigned to job analysts or be done by an engineering firm, if employed.

If the committee elects to write the job descriptions, the members should prepare themselves by study and practice in job description preparation. The committee, if assigning the work to job analysts, should review and approve the descriptions before the evaluation work is undertaken. When the services of an engineering firm are employed, a satisfactory procedure may be developed. In general, it has been found that the use of evaluation specialists will expedite the work of the committee and assist materially in securing uniform descriptions.

Only when all descriptions and factor specifications are prepared and agreed upon as complete should the committee begin the evaluation of the jobs. This may be done by the committee as a whole discussing and agreeing upon the point values or rank of each factor or job respectively, or by the method of averaging the individual weighting of each factor made by each committee member.

There are arguments supporting both techniques. Some evaluators insist that fixed points in increments of 5 or 10 may give accurate results when averaged, claiming that the validity of a 2 or 3 point differential between two jobs is assumed rather than verified. On the other hand, small increments may soften biases and promote better committee relations. Regardless of the technique applied, discussion of each job and its relation to each factor (or other job, if ranking is used) supplements the job description and adds a refinement which justifies the effort and time expended.

After all jobs are evaluated and rechecked carefully factor by factor and the final points tabulated, a scatter chart should be prepared, graphing each job according to its point total and straight time or base rate. This will result in a graphic picture of the company job and wage structure. The ideal structure should reveal the jobs positioned along a line gradually sloping upward from the unskilled to the skilled level of work. More often, however, the jobs are in clusters, generally sloping upward to the higher wage brackets.

Completion of the graph should be regarded as finishing the evaluation proper, inasmuch as the drawing of the wage conversion is more properly a matter of further collective bargaining, taking into account the market, the wage provisions of the existing agreement, ability to pay, and the wage stabilization policy of the National War Labor Board. The evaluation committee may be authorized by labor and management to work out and recommend a sound wage-conversion line, but such action should not be confused with the mechanics of the program.

The general policy of the United States Conciliation Service toward job evaluation is based entirely upon the desire of the Service to assist further in promoting harmonious labor-management relations.

Consistent with this policy, the advisability of undertaking an evaluation program should be carefully considered by the parties. There are certain compelling reasons which may outweigh the anticipated benefits of such a program. For example, the impact of job evaluation upon the traditional wage structure may be serious. This is likewise true with regard to the effects upon employees. There are also numerous other considerations, all of which demand that each situation be analyzed thoroughly to determine the wisdom of using evaluation. If the parties decide to undertake evaluation or if they have already performed an evaluation and have encountered difficulty in agreeing on its adoption, the Technical Division of the U. S. Conciliation Service, upon the joint request of the parties, will act in an advisory capacity.

The Technical Division does not always recommend that the parties undertake an evaluation program, nor does it approve or disapprove any specific plan or system. To recommend any specific plan would doubtless have the effect of the Department of Labor endorsing such a manual or plan, perhaps to the exclusion of others equally as good.

The Technical Division assists the parties with evaluation only upon joint request, and then only with the union and company participating. In this connection the Technical Division emphasizes the importance of naming to the evaluation committee competent and fair-minded persons capable of performing the detailed and objective work required for a good job evaluation, and stresses that labor and management give the committee full support.

It is recognized that no evaluation can be considered perfect, but an evaluation can be good or bad depending upon the adaptability of the plan used, the consistency with which it is applied, and the fair-minded ability of the evaluation committee. No evaluation plan, however good it may be, is worth the time, money, and effort expended if it is not continued and properly administered.

The U. S. Conciliation Service looks upon job evaluation as a method for determining the relative relationship of each job in a given plant to all other jobs within the same plant, and in this respect considers evaluation an instrument for correcting intra-plant inequities and for stabilizing the wage structure within a given plant. Not only does it eliminate inequities, but also it invariably brings to light many details, the knowledge of which is to the mutual advantage of the parties.

Evaluation is not intended as a device for obtaining a general increase in wages, and it should not be considered as such.

When beginning an evaluation the Technical Division believes it should be agreed by the parties that no employee will receive a reduction in his pay as a result of the evaluation. It should be thoroughly

understood that all employees receiving wages below the evaluated rate of the job will be brought up to the evaluated rate; whereas individual employees receiving wages above the evaluated rate will not be reduced, but the union and the company will endeavor to move such employees into jobs paying rates comparable to the rates which they are presently receiving.

To summarize, job evaluation can be a very effective instrument if both labor and management will recognize the importance of the undertaking and the work involved. An important part of the work is that of education. This should embrace the evaluation plan, the steps involved, and the necessity of carrying on the program through an efficient policy of administration.



APPENDIX B. JOB EVALUATION AND THE DEPARTMENT OF LABOR: DIVISION OF LABOR STANDARDS

**U. S. Department of Labor
Division of Labor Standards
Washington
25**

February 21, 1945

Mr. P. W. Jones

New York, N. Y.

Dear Mr. Jones:

During the past few years the Department of Labor has received innumerable requests from labor and management for information on the general principles and procedures of job evaluation and the handling of collective bargaining problems arising under a job evaluation plan.

Realizing the highly controversial nature of the subject, we do not believe it is within the province of a government agency to pass judgment on the merits of job evaluation as such or the comparative merits of any one particular plan or manual—questions which should in every case be determined by the parties involved.

On the other hand, there is a demonstrated need on the part of labor and management representatives in plants where job evaluation is already in effect or agreement has been reached to put a plan into effect for information on the basic principles and for suggestions concerning the practical problems with which they are confronted.

The Technical Unit of the U. S. Conciliation Service has made a useful contribution to the all-too-scarce literature in the field through the enclosed memorandum to Conciliation Commissioners.

The Division of Labor Standards believes that the next step is development of a basic guide to job evaluation directed particularly to supervisors and shop stewards. It should be written in simple non-technical language and deal concretely with problems involved in administration as well as installation of an evaluation program.

We propose to publish this as one of our series of industrial relations guides, which already include among other titles, "Settling Plant Grievances," "The Foreman's Guide to Labor Relations," and "A Guide to Labor Legislation for Supervisors and Shop Stewards."

Since a great many of the requests for information have come from union representatives, we feel that the emphasis of the Labor Standards publication should be on job evaluation under conditions of collective bargaining. Such a publication could serve as background material for instruction of members of evaluation committees, stewards, and supervisors.

In order that the publication should be as useful as possible to those for whom it is intended, we are asking a number of labor, management, and Government people who have specialized in this work to help us plan it.

I am enclosing a tentative outline. We would be very grateful for your comments and suggestions, with particular reference to the following:

1. General scope and organization of material.
2. Additional points which you think should be discussed, or points listed which should be omitted.
3. Specific comments on any of the points listed, especially:
 - a. The role of the labor representatives on a job evaluation committee: should they assume joint responsibility or merely retain the right to protest alleged errors?
 - b. Should grievances arising under job evaluation be handled through a continuing job evaluation committee, through the regular steps of the grievance procedure, or through the higher stages of the grievance procedure only?
4. Examples from your own industry or experience which you think would shed light on any of the points discussed.
5. Illustrations of job descriptions, scatter charts, final classifications into labor grades, or other evaluation material which would make useful exhibits to include as illustrations.

I am well aware of the many demands on your time these days. Our justification for requesting you to help us with this job is the knowledge that this sort of thing is so badly needed, and the hope that it will prove useful to members of your own organization as well as labor and management groups generally.

Your name will of course not be used in any way.

Thank you in advance for your co-operation.

Very truly yours,

[signed] Clara M. Beyer,
Assistant Director

Enclosure

**U. S. Department of Labor
Division of Labor Standards**

**Suggested Outline for Publication
*A GUIDE TO JOB EVALUATION
FOR SUPERVISORS AND SHOP STEWARDS***

Introduction—The Purpose of This Guide

- A. To provide background information on the principles and procedures of job evaluation for labor and management representatives on job evaluation committees, and for shop stewards and supervisors in plants where evaluation has been adopted.
- B. To outline some of the practical problems which may be anticipated in the installation and administration of an evaluation plan and to suggest ways and means of meeting such problems through the normal channels of collective bargaining.
- C. Through such information to help avoid the confusion, misunderstandings, and grievances which often result from failure to understand job evaluation and the problems which normally arise under evaluation.
- D. The Guide does not presume to pass judgment on the merits of job evaluation, the wisdom of applying evaluation in any given industry, or any particular evaluation plan or manual—questions which should in all cases be determined by the parties involved.

1. Job Evaluation and Collective Bargaining

- A. The purpose of job evaluation—to determine the relative relationship of each job in a given plant to all other jobs within the same plant, and thus provide the basis for an equitable wage structure.
- B. Job evaluation—what it is and what it isn't:
 1. It is "a methodical technique of reducing a highly personal question to a level where it may be discussed and analyzed as objectively as possible."
 2. It is *not* "an exact science"—does not eliminate the element of human judgment and therefore should be subject to collective bargaining.

2. The Main Steps in Installing a Job Evaluation Plan

- A. Setting up the evaluation committee.
 1. The role of the labor representatives.

- B. Determining the plan or manual to be followed.
 - C. Making the job descriptions.
 - D. Evaluating or ranking the jobs.
 - E. Charting the jobs according to value or rank.
 - F. Converting evaluations into money.
 - G. Preventing disputes from arising.
 - 1. Safeguarding existing wage rates of individuals whose jobs may be evaluated downward.
- 3. Administering a Job Evaluation Plan After Installation*
- A. Correcting errors in classification.
 - B. Evaluating new jobs when created.
 - C. Re-evaluating old jobs when job content is changed.
 - D. Adapting an existing evaluation plan to an "across-the-board" or percentage-wise change in wage rates.
 - E. Handling promotions under job evaluation.
 - F. Handling transfers under job evaluation.
 - G. Handling individual grievances arising under job evaluation.
- 4. Special Problems Arising Under Job Evaluation*
- A. War Labor Board policy.
 - B. The problem of apprenticeship or training under evaluation; use of sub-classifications.
 - C. Effect of job evaluation on seniority.
 - D. Downgrading resulting from increased job dilution.
 - E. Effect of cut-backs on a wage structure based on job evaluation.
 - F. Some probable effects of reconversion on a wage based on job evaluation.
- Appendix*
- A. Outline of major types of job evaluation plans and illustrations of each.
 - 1. Your plan or suggestion for inclusion.
 - B. Sample union contract clauses providing for union participation in job evaluation.
 - 1. Your contract or suggestion for inclusion.

APPENDIX C. SAMPLE JOINT JOB EVALUATION MANUAL *

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* Reproduced by permission of the Sperry Gyroscope Company, Inc. Copyright 1943. Prepared by the Joint Job Evaluation Committee (of Sperry Gyroscope Company, Inc., and Local 450, United Electrical, Radio, and Machine Workers, C.I.O.), and P. W. Jones.

4

INTRODUCTION**INTRODUCTION**

Wage problems in industry have become increasingly complex in recent years. The war has created a sudden demand for certain products in such volume that many jobs have had to be broken down in the interest of increased production. For example, whereas it was formerly common for an individual instrument maker to assemble a complete instrument, today these same instruments are put together piece by piece on assembly lines.

Rates of pay for many of the new jobs thus created had to be set without benefit of precedent and were often haphazard, having no factual basis. As a result the wage structure of many companies became unbalanced and presented many inequalities.

Much progress has been made in correcting these conditions. Industry today demands facts as a basis for making important wage decisions and it is in keeping with this trend that the Joint Job Evaluation Committee has drawn up the plan outlined in the following pages. This plan of Job Evaluation has been used to determine the relative value of all hourly paid occupations falling within the jurisdiction of the bargaining unit. The plan differs in detail, but is somewhat similar to plans developed over a period of years in other large industrial plants, and is specifically applicable to the various types of work performed in the plants of the _____ Company.

Job Evaluation like every other idea is the product of many minds. One group proposes, others change or refine, faults are pointed out and changed, weaknesses strengthened. The plan as developed here is subject to improvement, and such changes as are necessary will be made through the recommendations and with the approval of the Joint Job Evaluation Committee.

AUTHORIZATION

5

AUTHORIZATION

In order to determine the fairest rate of pay for all jobs coming under the jurisdiction of the bargaining unit, _____ Local # _____ and _____

_____ Company agreed to cooperate in a Joint Job Evaluation program—that is, a study and evaluation of each of the hourly paid occupations. As a result of these studies, it became possible to determine what any particular job was fairly worth in relation to all the other jobs.

The Joint Job Evaluation Committee consisted of five persons appointed by the union and five persons appointed by the company. This Committee had no authority to make recommendations as to any individual's rate, or as to the quality and quantity of any individual's work. It confined its activities strictly to the evaluation of the job itself, and not the person performing the particular job. The committee's work was based on facts, and these facts had to come from employees and supervisors alike.

It is intended that Job Evaluation will provide an equitable wage structure that will work for the mutual interest of all concerned.

6

JOB EVALUATION POLICY**CODE FOR JOINT EVALUATION COMMITTEE MEMBERS**

In the effort to create and maintain high standards in Job Evaluation work the following code for Evaluation Committee Members has been adopted by the Committee.

1. Study methods of Job Evaluation thoroughly.
2. Draw conclusions on the basis of facts.
3. As Job Evaluation is relatively new in industry, all principles must be doubly checked.
4. Full cooperation at all times between members of committee should be observed.

WHY JOB EVALUATION?

In the past, it has been a common practice for industry to go to great lengths to perfect dimensional controls to small fractions of an inch. The same can not be said of the majority of industries on the subject of comparative wages. Wages have, in many instances, been determined by a vague, unscientific, arbitrary and oftentimes erroneous basis of calculation. Any true Job Evaluation must have incorporated in it the following important considerations:

1. A basic wage level that is the highest the company can bear, consistent with reasonable profits.
2. A balanced wage structure calling for fair relationship of one job to another, and between the wage paid and the work done.
3. Recognition of variations in the cost of living, by localities.
4. Recognition of the company's or the industry's general prosperity.

It is only too clear that unless employees and management work together on a constructive program, taking into consideration all factors having a legitimate influence on wage adjustments, there will be little to justify any real hope that future wage questions will be settled on a more definitive and equitable basis than they have in the recent past.

EVALUATION OF JOBS

In the process of evaluating jobs, consideration was given at all times to the following conditions:

1. What does the job require an employee to have.
2. To what does the job subject an employee.

Each job was evaluated on the basis of an average worker performing a fair day's work.

SCOPE OF JOB EVALUATION

Job Evaluation is to be used in determination of comparative values of all "wage earning" occupations, both productive and non-productive, and expense labor, excepting only supervisory and clerical occupations.

JOB CHARACTERISTICS

7

**FACTORS COMMON TO ALL JOBS AND HOW
THEY ARE DETERMINED**

Before any basis or yardstick for measurement can be determined, it is necessary to find the common factors upon which the Job Evaluation Committee will base its judgment of the job's value. These are the variable factors which, when evaluated, will give the base rates, or the relative worth of each job. There are many characteristics which are common to all jobs. The seven most important characteristics are:

- I. Education
- II. Skill
- III. Responsibility
- IV. Accuracy
- V. Physical Effort
- VI. Mental Effort
- VII. Working Conditions

These characteristics and the break-down of each into sub-factors are defined on the following pages.

The PRIMARY elements are:

Education, Skill, Physical Effort, Accuracy, Responsibility and Mental Effort. Each of these main divisions is subject to sub-divisions, which are clearly defined.

The SECONDARY elements of Job Evaluation are:

Working Conditions. Because they are not an inherent part of the job they must be taken into account only after the primary requirements have been studied.

The above factors were arrived at after a careful study of job characteristics used in the Evaluation Manuals of various industrial organizations. This approach was believed to be the best method of determination inasmuch as the factors had been actually tried by use and found practical.

The committee selected the above factors out of many factors because these characteristics were the ones that were most applicable to the type of jobs to be evaluated.

BASIC POINTS

Common to all occupations found in the _____ Company are Honesty, Ordinary Care, Thoughtfulness, Willingness to Work, Proper Respect for Rules of Safety, Desire to Do One's Best, Reasonable Physical Capacity, Aptitude, and Availability for Industrial Employment.

For these characteristics, a base of 400 points is allotted to each employee. Job Evaluation as will herein be used is concerned only with Characteristics above this minimum.

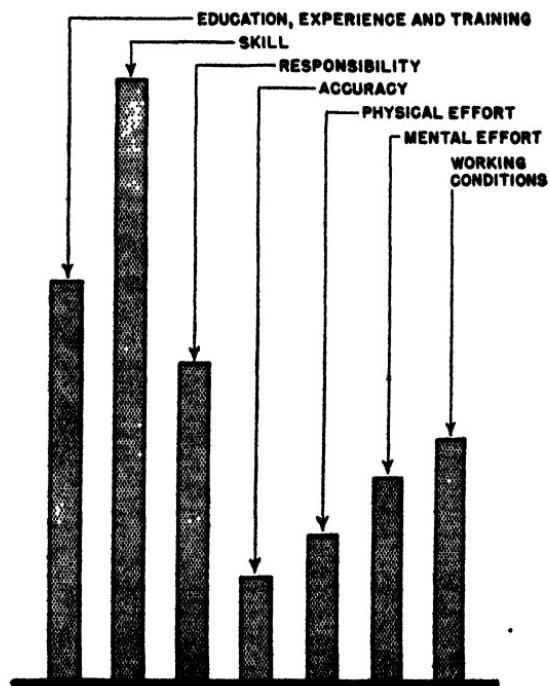
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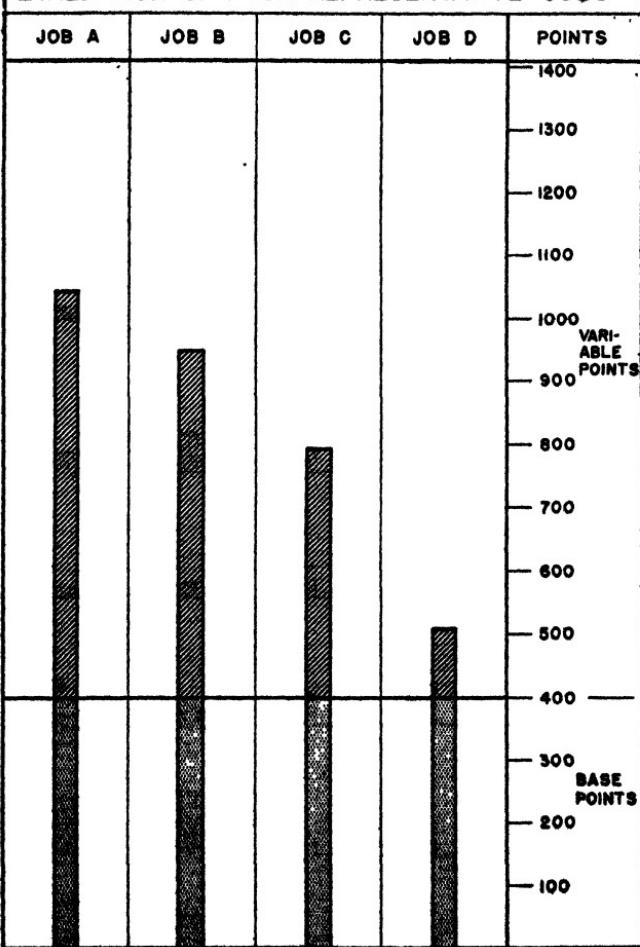
WEIGHTING

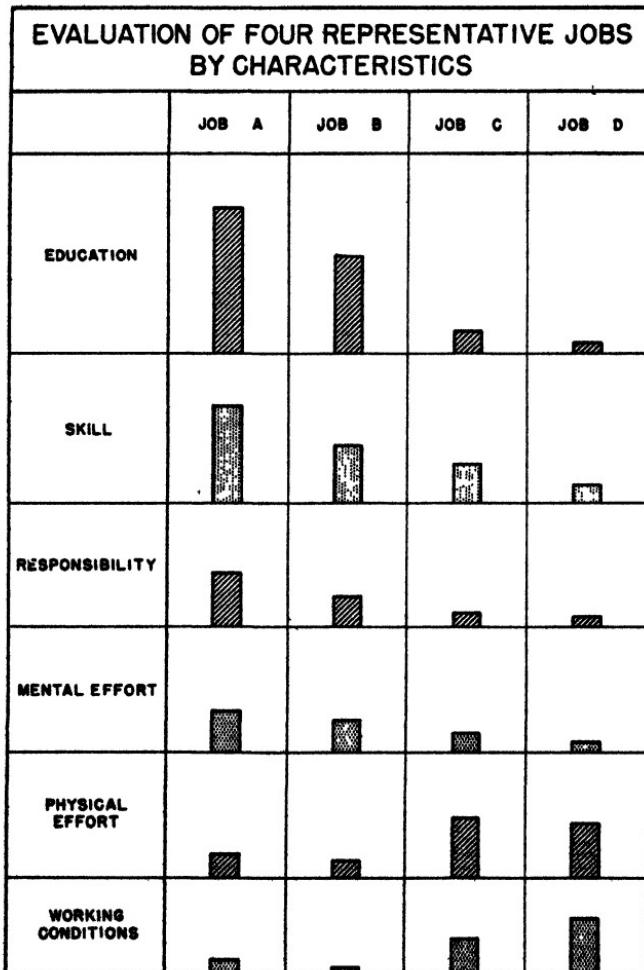
WEIGHTING OF JOB FACTORS

The relative worth of a job depends upon the extent to which the seven Characteristics are present in the requirements of the job. These Characteristics are not of equal importance and in order to recognize this difference each is weighted in accordance with the estimated importance.

CHARACTERISTICS	RELATIVE WEIGHT
I. EDUCATION	
A. Schooling or its Equivalent.....	75
B. Experience and Training Required.....	125
Total Points	200
II. SKILL	
A. Manual Skill Required	125
B. Mental Skill Required	175
Total Points	300
III. RESPONSIBILITY	
A. For Safety of Others.....	30
B. For Spoilage of Productive Parts and Productive Material	85
C. For Damage to Machines and Equipment	45
Total Points	160
IV. ACCURACY	
Total Points	50
V. PHYSICAL EFFORT	
Total Points	70
VI. MENTAL EFFORT	
Total Points	100
VII. WORKING CONDITIONS	
A. Hazards to Self	60
B. Surroundings	45
C. Connected Expense	15
Total Points	120
Total Points for all Characteristics.....	1000

RELATIVE RANGE OF JOB CHARACTERISTICS

EVALUATION OF FOUR REPRESENTATIVE JOBS



12

EDUCATION**I. EDUCATION****MAXIMUM POINTS — 200****This Characteristic is divided into sub-factors:**

A. SCHOOLING or its equivalent.	75 Points
B. EXPERIENCE and TRAINING.	125 Points
Total	200 Points

A. SCHOOLING or its equivalent.

Definition: This Characteristic is a measure of the general knowledge required for successful performance on any particular job.

Discussion: Actual formal education is not necessarily essential in developing knowledge; hence the Committee has avoided measuring knowledge required for a given occupation in terms of years of schooling. Instead, knowledge has been measured in terms of what the job requires an employee to know in such matters as shop mathematics, blueprint reading, chemical and physical principles, etc.

Example: It is obvious that it requires a greater degree of knowledge (education or its equivalent) for a person to meet the requirements of a Toolmaker than it does for a person to meet the requirements of a Sweeper.

SCHOOLING OR ITS EQUIVALENT

18

CHARACTERISTIC: EDUCATION — A. SCHOOLING OR ITS EQUIVALENT

CODE	STEP DEFINITION	POINTS	EXAMPLE
------	-----------------	--------	---------

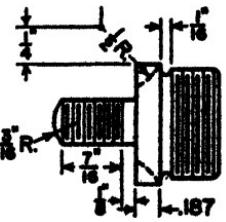
- A. Job requires only the understanding of simple verbal instructions.

0
to
12

- B. Work may require reading and understanding written instructions. May use simple arithmetic such as counting.

13
to
25

- C. May use piece part drawings showing detailed items with a limited number of dimensions. May use precision measuring instruments such as micrometer. May make calculations involving decimals, fractions or percentages.

26
to
37

14

EDUCATION

CHARACTERISTIC: EDUCATION — A. SCHOOLING OR ITS EQUIVALENT (Cont.)

CODE	STEP DEFINITION	POINTS	EXAMPLE
------	-----------------	--------	---------

- D. Work may require use of blueprints involving detailed casting or moderately intricate assembly drawings with an average number of dimensions. Uses all common precision measuring instruments. Work may involve occasional use of shop mathematics, such as ratios, proportions or limited use of algebra, geometry or trigonometry.

38
to
50

- E. May require interpreting large detailed assembly drawings or complex part drawings involving a large number of dimensions, in which it is difficult to locate and determine finished surfaces and dimensions. May require all-around use of mathematics as required in some trades. May require limited fundamental knowledge of electrical, chemical or mechanical principles.

51
to
62

- F. Job requires all-around knowledge of electrical, mechanical or chemical principles.

63
to
75

EXPERIENCE AND TRAINING

15

**B. EXPERIENCE and TRAINING**

Definition: Experience is the minimum period of time the average person requires to obtain competency in a specific job, trade, or occupation.

Discussion: To gain practical knowledge requires time, therefore, the length of time required to gain this experience was selected as a basis of measurement. Note that this time factor has nothing to do with classifying the individual employee inasmuch as one employee might learn to perform a job in six months where another employee may require a year.

It should be noted that the length of time an employee must oftentimes spend on a job due to lack of turnover, or openings on jobs of a better nature should not and cannot be considered as any part of this training period.

16

EXPERIENCE AND TRAINING

CHARACTERISTIC: EDUCATION—B. EXPERIENCE AND TRAINING		
CODE	MINIMUM TIME IN MONTHS TO BECOME PROFICIENT ON JOB	POINTS
A	1 month or less.	12
B	2 months "	20
C	3 " "	25
D	4 " "	30
E	5 " "	34
F	6 " "	37
G	7 " "	40
H	8 " "	42
I	9 " "	44
J	10 " "	46
K	11 " "	48
L	12 " "	50
M	13 " "	51
N	14 " "	53
O	15 " "	55
P	16 " "	56
Q	17 " "	57
R	18 " "	59
S	19 " "	60
T	20 " "	62
U	21 " "	63
V	22 " "	64
W	23 " "	65
X	2 years	67
XY	2½ "	74
Y	3 "	79
YZ	3½ "	84
Z	4 "	88
AA	5 "	96
AB	6 "	103
AC	7 "	109
AD	8 "	115
AE	9 "	120
AF	10 "	125

SKILL

17.

II. SKILL

MAXIMUM POINTS — 300

Manual Skill and Mental Skill, though closely related, differ in actual practice.

Definitions: A. **MANUAL SKILL:** The required ability to use hand and machine tools, instruments, and equipment properly, in an adequate or competent manner.

B. MENTAL SKILL: The ability to plan and visualize the task to be performed, ahead of actual performance. Judgment and resourcefulness are inherent factors requiring consideration.

Discussion: Care must be exercised when evaluating these characteristics not to confuse the skills adequate for the job with excessive skills, which may be possessed by persons now doing the job.

18

MANUAL SKILL**CHARACTERISTIC: SKILL — A. MANUAL SKILL**

CODE	STEP DEFINITION	POINTS	EXAMPLE
------	-----------------	--------	---------

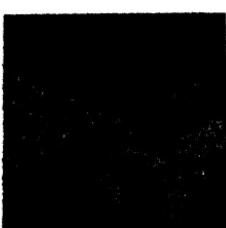
- A. Moving or stacking parts, materials; sweeping, shoveling or loading, rolling of barrels.

0
to
17

- B. Use of common hand tools such as pliers, screwdriver, scraper. Use of hand power tools such as electric drill, pneumatic chisel.

18
to
34

- C. Operation of nonautomatic machines in a routine manner, checking of production parts with precision measuring instruments; assembling and adjusting of simple sub-assemblies, soldering leads to terminals.

35
to
53

MANUAL SKILL

19

CHARACTERISTIC: SKILL — A. MANUAL SKILL (Continued)

CODE	STEP DEFINITION	POINTS	EXAMPLE
------	-----------------	--------	---------

- D. Operation of machine tools where ordinary adjustments are required. This may involve simple setups of machine tools; assembling and fitting of partially completed units or sub-assemblies to tolerances which may be occasionally close; performance of simple wiring jobs on smaller units and sub-assemblies; requiring a limited technique; setup of simple jobs on angle plates.

54
to
71

- E. Setup and operation of ordinary non-automatic machine tools involving the more difficult jobs; wiping lead joints; wiring and cable forming jobs of a moderately complicated nature; building of wooden partitions; setup of complex jobs on angle plates.

72
to
90

- F. Bench operations similar in nature but difficult to perform; setup of fully automatic machines; setup of medium and large size castings for heavy machines; performance of difficult assembling of complicated units and sub-units involving intricate fittings and adjustment to close tolerances.

91
to
108

20

MANUAL SKILL**CHARACTERISTIC: SKILL — A. MANUAL SKILL (Continued)**

CODE	STEP DEFINITION	POINTS	EXAMPLE
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- C. Bench operations difficult to perform and involving fitting, filing, or lapping to final size or fitting to a mating part; intricate wiring and assembly operations of an experimental nature requiring all-around knowledge of assembly and machine shop work.

109
to
125

MENTAL SKILL

21

CHARACTERISTIC: SKILL — B. MENTAL SKILL

CODE	STEP DEFINITION	POINTS	EXAMPLE
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***ROUTINE NOT DETERMINED BY WORKER**

- A. Job duties are definitely and clearly established. Operations subject to constant supervision. Typical examples: Separation of parts from scrap, rough burring of parts, sweeping floors, elementary assembly operations.

0
to
30

- B. Operations are defined as to methods and tools used. May at times require making minor decisions. Supervision is usually available. Typical examples: Selection of parts to specifications such as size or shape, simple soldering operations, assembly of parts progressively into a unit. Simple parts inspection, operation only of machines such as drill press, punch press, etc.

31
to
59

- C. Job procedure is established as to methods and tools used. Minor decisions may be required in planning details of operation. General supervision is available. Typical examples: Set-up of machine tools; bench or assembly operations; mixing paints or pigments; inspection of assembled parts and sub-assemblies; wiping joints.

60
to
88

22

MENTAL SKILL

CHARACTERISTIC: SKILL — B. MENTAL SKILL (Continued)			
CODE	STEP DEFINITION	POINTS	EXAMPLE

*ROUTINE MAY BE DETERMINED BY WORKER

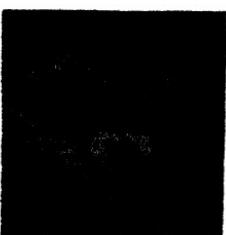
- D. Job routine is standardized as to methods of performing work. Decisions may be required in determining proper sequence of job steps, and devising ways and means of solving related job problems. Minimum supervision is available.
Typical examples: Difficult set-ups of machine tools.

89
to
117

- E. Work follows generalized line of procedure. Judgment and initiative may be required in selecting proper method. There may be only a minimum amount of supervision.
Typical examples: Repairing machines, inspection of tools, diagnosing electrical circuit failures, determining cause of mechanical failures, layout of sample castings.

116
to
146

- F. Job requires planning and devising of procedures to follow. May require complete layout of work ahead of performance. Minimum amount of supervision.
Typical examples: Making intricate tools, dies, gages.

147
to
175

"By "Routine" is meant any series of acts directed toward the completion of a task."

RESPONSIBILITY

23

III. RESPONSIBILITY**MAXIMUM POINTS — 160**

Several responsibilities are common in varying degrees to all Sperry jobs.

These are as follows:

A. RESPONSIBILITY FOR SAFETY OF OTHERS	30 Points
B. RESPONSIBILITY FOR SPOILAGE OF PRODUCTIVE PARTS OR MATERIALS	85 Points
C. RESPONSIBILITY FOR DAMAGE TO MACHINES OR EQUIPMENT	45 Points
Total	160 Points

A. RESPONSIBILITY FOR SAFETY OF OTHERS

Definition: This factor relates to the extent of an injury to others which an employee on a given job can normally prevent.

Discussion: The evaluation for this element is based upon the likelihood of injuries to others and the usual seriousness of the resulting accident. In cases of doubt, actual accident records may be consulted.

It is important to keep the phrase "probability" in mind, rather than place emphasis on "possibility" when considering injuries to fellow workmen.

24

SAFETY OF OTHERS

CHARACTERISTIC: RESPONSIBILITY—A. RESPONSIBILITY FOR SAFETY OF OTHERS

CODE	Minor cuts, bruises, or burns	Severe cuts, bruises or abrasions	Fractures, severe burns, eye injuries	Permanent disabilities	
				M	N
A	Little Responsibility. Job performed in an isolated location, or where no machinery is involved. Material handled is light.			5	10
B	Reasonable care to own work necessary to prevent injury to others.			8	13
C	Considerable care in performance of own work necessary to prevent injury to others.			10	15
D	Constant care necessary due to inherent hazards of the job not completely safeguarded, but where individual may act to prevent injury.			12	17
E	Responsibility where the safety of others depends entirely upon correct action of the workers. Inherent hazard on job cannot be safeguarded..			15	20
				25	30

SPOILAGE OF PRODUCTIVE PARTS

25

B. RESPONSIBILITY FOR SPOILAGE OF PRODUCTIVE PARTS OR MATERIALS

Definition: Responsibility is gauged according to the care required to prevent damage to parts in process, finished parts, or raw materials, and the resultant costs to the company of either corrective work or the actual cost of scrapping.

Discussion: Consideration must be given to the likelihood of damage, the average value of parts or materials. The cost of spoilage may be reflected in any of the following:

1. Cost of product less scrap value
2. Cost of repairing
3. Cost if product is lost entirely
4. Cost of reprocessing

26

CHARACTERISTIC: RESPONSIBILITY —
B. RESPONSIBILITY FOR SPOILAGE OF PRODUCTIVE PARTS AND MATERIAL

SPOILAGE OF PRODUCTIVE PARTS

PROBABILITY OF DAMAGE	EXTENT OF LOSS FROM DAMAGE							
	\$0 to \$10	\$11 to \$20	\$21 to \$50	\$51 to \$100	\$101 to \$200	\$201 to \$500	\$501 to \$1000	\$1001 and over
CODE	N	O	P	R	S	T	U	V
A Damage and liability to owner Little attention required	0	1	2	3	5	7	10	13
B Damage easy to avoid Ordinary attention required	8	10	12	14	17	22	26	31
C Damage fairly easy to avoid Close attention required	16	20	24	28	34	42	48	55
D Damage difficult to avoid Constant concentrated attention required	24	30	36	44	54	64	74	85

DAMAGE TO MACHINES

27

C. RESPONSIBILITY FOR DAMAGE TO MACHINES OR EQUIPMENT

Definition: Responsibility of this nature is gauged according to probable cost or loss that might result from an error in using or handling machines or equipment.

Discussion: Where everything possible has been done to make a machine foolproof, and automatic stops, etc., have become an integral part of this equipment, the mere fact that the machine is expensive does not merit a high rating on responsibility.

In evaluating this responsibility it is well to remember the average "probability" should be measured rather than the maximum "possibility" of damage to machines and equipment.

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DAMAGE TO MACHINES

CHARACTERISTIC: RESPONSIBILITY — C. RESPONSIBILITY FOR DAMAGE TO
MACHINES AND EQUIPMENT

CODE	AVERAGE LOSS FROM DAMAGE	POINTS
A	Not over \$5.	1 to 6
B	\$6. to \$25.	7 to 12
C	\$26. to \$50.	13 to 18
D	\$51. to \$100.	19 to 24
E	\$101. to \$250.	25 to 30
F	\$251. to \$500.	31 to 36
G	Over \$500.	37 to 45

ACCURACY

★ ★

28

IV. ACCURACY

MAXIMUM POINTS — 50

Definition: Accuracy is the exactness required by the job in order to conform with acceptable standards of quality or performance.

Discussion: This factor measures the degree of precision required in handling of product or material and for adjustment to and manipulation of equipment, instruments, and tools. Consideration should be given to the means provided for controlling accuracy, the extent of control exercised by the worker, and the nature of the work.

30

ACCURACY

CHARACTERISTIC: ACCURACY			
CODE	STEP DEFINITION	POINTS	EXAMPLE
A.	Ordinary accuracy or "rule of thumb". Typical examples: taking rough measurements using steel tape or rule; arranging stock; distributing parts or material; swooping loading.	0 to 10	
B.	Accurate count or observation. Typical examples: use of scales, square, templates, fixed gages; winding simple coils; maintaining stock records.	11 to 20	
C.	Accuracy as determined by instruments, commonly accepted in the trade (commercial tolerances). Typical examples: machining operations involving tolerances over .001"; heat-treating metals, carpentry.	21 to 30	

ACCURACY

31

CHARACTERISTIC: ACCURACY (Continued)

CODE	STEP DEFINITION	POINTS	EXAMPLE
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- D. Precision accuracy. Tolerances below .001" achieved by machine manipulation. 31
Typical examples: operation of bench lathe, 40
precision grinder, engine lathe, jig borer.



- E. High precision accuracy achieved manually. 41
Typical examples: precision fitting of gears, 40
bearings, shafts, punch and die sets. 50



32

PHYSICAL EFFORT**V. PHYSICAL EFFORT****MAXIMUM POINTS — 70**

Definition: Physical effort evaluations are based upon the demand for expenditure of energy or physical exertion required of employees for certain occupations, and the frequency with which such physical exertion occurs.

Discussion: Physical effort demand relates to the amount of effort or endurance required or both. Light work requiring little physical exertion is given a minimum rating, while jobs requiring continuous physical exertion, or jobs where an individual works with heavy materials, or work is of an intermittent nature involving strain, is evaluated higher.

In evaluation proceedings consideration must be based on amount and continuity of physical effort.

MENTAL EFFORT

35

CHARACTERISTIC: MENTAL EFFORT

CODE	STEP DEFINITION	POINTS	EXAMPLE
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- A. Flow of work or character of duties is intermittent, and only require attention at infrequent intervals.
Typical examples: loading and unloading material.

0
to
20

- B. Flow of work and character of duties require frequent mental or visual attention.
Typical examples: burring parts; operation of machines.

21
to
40

- C. Flow of work is repetitive and character of duties or operation requires continuous mental or visual attention.
Typical examples: setting up machines.

41
to
60

36

MENTAL EFFORT

CHARACTERISTIC: MENTAL EFFORT (Continued)			
CODE	STEP DEFINITION	POINTS	EXAMPLE

- D. Must concentrate mental and visual attention involving coordination of mind and eye for sustained periods.

Typical examples: filing cams.

61
to
80



- E. High concentration required, involving unusual coordination of mind and eye.

Typical examples: spotting cams; pivot sighting.

81
to
100



WORKING CONDITIONS

37

VII. WORKING CONDITIONS**MAXIMUM POINTS — 120**

Working Conditions relates to the degrees of adverse features that are present in any given job, over which the employee has no control.

The sub-factors of this characteristic which are to be considered are:

A. HAZARD OF THE JOB	60 Points
B. SURROUNDINGS	45 Points
C. CONNECTED EXPENSE	15 Points
Total	120 Points

A. HAZARDS OF THE JOB

Definition: Hazard indicates the probability and average seriousness of injury to which an employee is subjected on any particular job.

Discussion: Hazards are those inherent conditions which, due to the nature or location of the job, present potential danger of injury to the employee. While company products are manufactured under conditions as favorable as it is practically possible to do so, there are conditions and hazards that cannot be entirely eliminated.

The step definitions listed under this governing factor are indicative of the type and extent of injury which a worker might be expected to suffer should an accident occur on the job. The probability of such injury should be considered rather than the possibility. Accidents are always possible, but the seriousness of injuries received on the job depend largely on the nature of the work and the effectiveness of the protective measures provided.

28

HAZARDS**CHARACTERISTIC: WORKING CONDITIONS — A. HAZARDS OF THE JOB**

PROBABILITY OF INJURY	Injury Resulting in Layoff			
	Cuts, Bruises or Burns No Time Lost	up to One Week	1-24 Weeks	More Than Six Months
CODE	M	N	O	P
A Injury is very unlikely and regarded as unusual.	5	10	15	20
B Occasional injury or accident may occur. Usually all hazards safeguarded.	10	15	20	30
C Possible hazard exists because of conditions that cannot be 100 per cent guarded.	15	20	30	45
D Nature of work is a recognized hazard requiring alertness at all times.	20	30	45	60

SURROUNDINGS

39

B. SURROUNDINGS

Definition: Surroundings relates to the environment or physical conditions under which the job must be performed and over which the employee has no control. They cannot always be eliminated or minimized, but affect the employees' mental or physical well-being.

The extent to which these elements may be present and their characteristics are basic considerations for evaluation.

40

SURROUNDINGS

CHARACTERISTIC: WORKING CONDITIONS — B. SURROUNDINGS			
CODE	STEP DEFINITION	POINTS	EXAMPLE

- A. Conditions where disturbing influences such as dirt, oil, grease, or noise are present to a negligible extent (normal temperature).
Typical examples are: coil winding, general assembly work, running errands, operating elevator, carpentry.

0
to
11

- B. Conditions where disturbing influences such as dirt, oil, grease, noise, heat or cold are present to a normal extent.
Typical examples are: general machine shop conditions where oil, grease or coolants are used intermittently, such as milling machine, broaching, honing, engine or turret lathe operations; making tools or patterns.

12
to
22

- C. Conditions where disturbing influences such as dirt, oil, grease, noise, heat or cold are present to the extent of being somewhat disagreeable.
Typical examples are: machine repairing, heat treating.

23
to
33

SURROUNDINGS

41

CHARACTERISTIC: WORKING CONDITIONS — E. SURROUNDINGS (Continued)

CODE	STEP DEFINITION	POINTS	EXAMPLE
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- D. Conditions where disturbing influences such as excessive dirt, dust, oil, grease, noise, heat or cold are present to an extent which is more or less continuous.
Typical examples are: cleaning furnaces, operating abrasive cut-off machine, room sand-blasting.

34
to
45

42

CONNECTED EXPENSE

C. CONNECTED EXPENSE

Definition: The yearly expenditure of money by an employee for tools or clothing above that of normal wear shall be credited under this factor.

Discussion: Where tools or clothing are furnished by the Company no credit shall be given. The replacement life of tools is about five years; for example, in the case of a toolmaker who may possess around \$250 worth of tools, credit points shall be given for a \$50 yearly connected expense.

CHARACTERISTIC: WORKING CONDITIONS — C. CONNECTED EXPENSE

CODE	COST PER YEAR	POINTS
A	\$10.00 or less	0-3
B	\$11.00-\$20.00	4-6
C	\$21.00-\$30.00	7-9
D	\$31.00-\$40.00	10-12
E	\$41.00-\$50.00	13-15

TO: Foremen and Shop Stewards

This manual is the standard upon which occupations under your jurisdiction have been evaluated.

Any questions which you may wish answered with respect to the contents of this manual, explanations concerning the manner of its use, or interpretation of terminology should be directed to this department.

Salary and Wage Department

APPENDIX D. REPRESENTATIVE CLAUSES FROM LABOR AGREEMENTS CONCERN- ING JOB EVALUATION *

AUTHORIZATIONS

1. The Company agrees to set up a proper classification of jobs according to recognized job rating standards to work out proper differentials for all classified labor in order to ensure equal pay for equal skill, effort, responsibility, and working conditions. It is agreed that the _____ plan of job evaluation presently used shall be used for the purpose of point evaluation. In the event of disagreement between the parties on point evaluation of jobs, the matter shall be referred to the War Labor Board for determination.

2. Rates for both men and women will be determined in the same manner as provided under the job evaluation plan now in effect.

3. On _____ the National War Labor Board decided this issue, approving agreement between the parties dated _____ which included in detail a job classification and evaluation plan, the labor grades with appropriate rate ranges for each grade, and the location of each job by labor grade.

4. The foregoing method of adjusting alleged inequalities as described in section _____ above is thought to be the best and fairest that can be currently developed. However, it is the joint desire of both the Union and the Management to progress on the subject of proper occupational evaluation. In this way, the unusual differentials existing throughout the plant wage structure can ultimately be brought into proper relationship which will be developed by a thorough job analysis plant-wide. It is believed that more harmonious relationship will exist through the _____ when men can be scientifically assured that their income will have direct relationship with their skill, activity, responsibility, etc.

It is agreed that jointly this method of job analysis or evaluation will be conscientiously and energetically pursued ultimately to arrive at an intelligent final which can, at such a time as agreed upon, determine the propriety of all alleged inequalities.

* From the author's study of more than three hundred labor contracts, which served as the subject of a panel discussion before the National Industrial Conference Board in 1944.

5. The parties hereto recognize the principle of job evaluation and employee rating as a basis of employer's wage agreement policy whereby wage differentials are based on relative skill, effort, performance, working conditions, and responsibility.

6. Management will continue to write job requirements and initially determine the classification for each occupation, in accordance with the _____ Job Evaluation Plan, approved by the National War Labor Board on _____.

7. It is agreed that the present Merit Rating and Job Evaluation system which has proved satisfactory in the past be continued in the future.

8. By mutual agreement between the _____ and the _____, wage maxima for male salaried positions based on Job Evaluation were introduced on _____. When hereafter it is mutually agreed upon between the _____ and the _____, wage maxima based on job evaluation may be introduced for other employee groups.

9. The Employer will complete the job rating system now being installed. The procedure for installation will be as follows:

a. After all jobs are rated, job descriptions but not point ratings will be checked with employees by the Employer and the Union.

b. The Union committee will check the point ratings established by the Employer.

c. Union disagreements on point ratings will be reviewed by the Employer. If the ratings are proven by the Union to be wrong, they will be changed by the Employer.

d. The Employer will establish the rate range and expected earned rate for each labor grade on the basis of point ratings. The establishment of the line of relationship between point ratings and wage rates and the resulting rate ranges for the purpose of this commitment will be made exclusively by the Employer.

e. Rates of employees receiving more than the maximum of the new rate range will not be reduced. The policy for retraining such employees in the jobs, the new rate for which is comparable to their old rate, will be negotiated.

10. Subject to such Federal laws and Executive Orders as shall prevail, the Company shall provide a system of classification of employees and rate ranges of pay for each classification and methods of determining changes in classification of employees. Pending the establishment of such classification and rate ranges therefor, the Company agrees that no reduction in wage rates shall be made. The Union shall par-

ticipate in and shall approve the establishment of such classification and rate ranges.

11. A committee consisting of representatives of the company and of the union shall be organized for the purpose of preparing a job classification system for the employees of the company and shall classify employees according to the system worked out. In the event of any disagreement, the classification upon which the company and the union are unable to agree shall be submitted to the Arbitrator for decision.

12. The Union and the Company agree that Job Evaluation by a joint committee of Management and Union representatives will be the basis for determining the proper relationships between factory job rates. It is understood that this does not interfere with the establishment of the general level of wages by collective bargaining.

13. The Company and the Union recognize that a plan for the adoption of a stabilized rate structure should be worked out. To accomplish this end, the Company and the Union will probably after the execution of this agreement endeavor to agree upon a plan that will solve this problem within 90 days from the date hereof. Until such plan has been agreed to, Section _____, Rate Establishment and Adjustment of the 1941 agreement between the parties hereto, shall prevail.

SCOPE

14. Each job will be analyzed as to the degree of skill, training, etc., required, after which it will be assigned to the proper group consisting of like or similar jobs.

15. The rates of pay for factory but not maintenance or machine shop employees have been set by job evaluation. The ranking of the jobs from most to least important has been done jointly by the Union and Management. The lines of division between rate classes in this ranking have been established by collective bargaining. The resulting schedule of rates of pay will be found in the union agreement.

WAGE POLICY OF THE EMPLOYER

16. It is the announced policy of the Employer to pay wages that are at least equal to those which prevail in the area for similar work under comparable conditions. In establishing wages of individual employees the Employer will take into consideration the necessary job rating qualifications.

In order to establish a fair and equitable basis of wage adjustments, to minimize wage inequities among employees, and to establish equal pay for equal work regardless of sex, all jobs offered by the Employer

are and will be studied and rated by the Employer and reviewed by the Union.

The wage scales established for the various labor grades are on record with and have been approved by the National War Labor Board and are effective subject to future negotiations and legal agreement between the Union and the Employer.

JOB EVALUATION COMMITTEES

Joint Job Evaluation Committee

17. The Joint Job Evaluating Committee shall meet periodically to determine and approve all job descriptions and job evaluations pertaining to the Production and the Maintenance Departments. Five committee members from the Company and five from the Union shall constitute a quorum at any meeting; original job evaluating shall require at least three-fourths affirmative votes from the Committee; in cases of dispute issues, after jobs have been approved by the Committee, a majority vote shall govern; in cases of an even number of dissenting and affirmative votes on disputed issues, the Chairman of this Committee shall, after thoroughly considering and discussing the facts with the Committee, call for another vote and be permitted to vote on the issue with the Committee.

18. For the purpose of assuring a well-balanced and informed JOINT JOB EVALUATING COMMITTEE, both the Company and the Union shall appoint two members to serve for a period of one year, two members for a period of two years, and two members for a period of three years. Thereafter, two members, who have not served during the preceding twelve months, from the Company and the Union shall be appointed each year to serve for three years. In case of a vacancy a new member shall be appointed to serve the unexpired term.

19. The Company and the Union shall each appoint a committee consisting of six members forming a JOINT JOB EVALUATING COMMITTEE. The Company and the Union recognize the importance of selecting personnel to this Committee who have attained a broad-knowledge of the various operations in the area of the plant which they represent, in order successfully to carry out the responsibility of a JOINT JOB EVALUATION COMMITTEEMAN. The Union therefore agrees to appoint its committee from designated areas of the plant mutually agreed upon by the Company and the Union.

20. Job evaluation of hourly factory jobs is done by a joint committee consisting of two regular members and an alternate appointed by the Union and two members and an alternate from Management.

21. The committee and supervision from each department shall approve each job description for the respective department. Should there be individual job description disagreements, they shall be adjusted in joint meeting between management and the joint committee.

Permanency of Committee

22. A permanent joint job evaluation committee meets to evaluate new jobs, to re-evaluate jobs which have been changed in nature. In the past the committee re-evaluated any jobs upon a request from a majority of the workers on the jobs, provided the request was O.K.'d by the Union Executive Board or at the request of Management. Today such re-evaluations by request are made only when the job has changed in some important respect. All re-evaluations are done with the understanding that the committee's work will be accepted whether the rate goes up, goes down, or stays the same.

Chairman of Joint Job Evaluating Committee

23. The Company shall designate a Chairman, other than the twelve regular members of the JOINT JOB EVALUATING COMMITTEE, who shall preside at all meetings, having no vote except as set forth in Section E herein.

Administration

24. There shall be a continuing Joint Job Evaluation Committee consisting of ten persons, five designated by the Union and five by the Employer. The Employer's Salary and Wage Administrator shall act as Secretary of the Joint Job Evaluation Committee. When a new job is established, the Secretary will develop a job description and evaluate such job by using the Joint Job Evaluation Manual. The job description and evaluation of new jobs shall be submitted for approval to the Joint Job Evaluation Committee. The Employer's and the Union's designees on the Joint Job Evaluation Committee shall each vote as a unit on any matter that comes before the Committee. In the event of disagreement on any matter before the Committee, including the question of whether a new job has been or should be established, the matter shall be finally determined by arbitration under the arbitration machinery set forth elsewhere in this Agreement. Such other rules and regulations for the procedure of the Joint Job Evaluation Committee shall be mutually developed by the parties as the necessity therefor arises.

Actual Process of Job Evaluation

25. The actual process of job evaluation involves three steps:
Step 1. Gathering of detailed job descriptions. This is done by members of the committee in collaboration with the foremen and the workers

on the job. The job description is not accepted by the committee until there is complete agreement between Management and workers concerning all the facts included.

Step 2. The rating of the job. This is done by the committee. The job is compared with other jobs in terms of about fifteen different factors, such as experience required, physical effort, mental effort, hazards, accuracy, responsibility for equipment and material, etc. There are scales for each of the fifteen factors and the committee assigns a step on each of these scales to the job being evaluated. The committee have no knowledge of the number of points which go with each step of the scale. They simply assign the step A, B, or X of the scale.

It is important to realize that jobs, not men, are evaluated. The committee attempts to determine how much of these things is required for the satisfactory performance of the job in question. They do not consider the actual people doing the job at the time.

Step 3. The completed evaluation is turned over to Mr. _____ The points which go with each step of the scales are signed in his office. Once these are totaled the job is fitted into the rate structure automatically.

a. If the job is an old job being re-evaluated and the re-evaluation comes within 5 per cent plus or minus of the old evaluation, the rate for the job is unchanged and the old evaluation stands.

b. If the evaluation of a new job or the evaluation of an old one falls within 5 per cent plus or minus of a line of division between rates, the committee evaluates the job a second time. The average of the two evaluations is taken as the final figure. This is to make sure that borderline cases are fairly treated.

JOB DESCRIPTIONS

26. The phrase "composite statement of alternative requirements for the job" in sub-section above means: that with respect to a particular description the essential work requirements as they exist in various jobs are combined in the final uniform description of the job, and therefore that the job as normally performed does not necessarily include all of the work requirements of that job as set forth in the composite statement; and that when an assignment of a worker is made to a job classification it is not required that he perform all of the requirements of the composite statement.

27. The first sentence in each of the A job descriptions shall be construed to be a brief description of the occupation; that such sentence is descriptive of the occupation as a whole and is intended to distinguish that occupation from other occupations; that such occupation is in turn

divided into one or more job classifications designated by letters as A, B, or C; and that the statement of operations, i.e., work requirements in each job description, provides the basis for determining the job classifications within the occupation when interpreted and applied as hereinafter provided.

28. In the assignment of any worker in a particular plant to the appropriate job classification under the classification and wage rate schedule provided for above, each job description incorporated in such schedule shall be construed as a composite statement of alternative requirements for the job, and such assignments shall be made with due regard to the work normally performed in the particular plant.

NEW JOBS OR OCCUPATIONS

Changes in Job Contents

29. The Union and the Company agree to follow in the future as a basis for determining changes of job content the job evaluation procedure as used and set up by the _____.

Therefore, it is understood and agreed that if during the duration of this agreement there shall occur any substantial changes in the job contents of any occupational classification attributable to changes in working conditions brought about on account of changes in manufacturing processes or mechanical equipment, there shall be such reasonable adjustment in wage rates, increases, or decreases of the occupational classification involved as may be warranted under the circumstances.

Such adjustment will be made in accordance with job evaluation procedures followed in the making of the job evaluation survey by the _____.

In the event the representative or representatives of the Company and the Union designated to make such adjustment are unable to apply such procedures as to arrive at a mutual satisfactory adjusted rate, the matter will at the request of either party be adjusted in accordance with the grievance procedure set forth in this agreement.

It is understood and agreed that consideration of the matter under the grievance procedure shall be limited to the determination of an adjusted rate in accordance with job evaluation procedures following in the making of a job evaluation survey except as provided in this Section _____. Grievances relating to wage rates and job classifications shall not be subject to arbitration provided that nothing herein contained shall prevent the Union or the Company from utilizing the services of the National War Labor Board.

Establishment of New Jobs

30. The Employer shall have sole discretion in the description, evaluation, and analysis of jobs on such new operations as may be established. The description, evaluation, an analysis of the Employer shall be accepted by both parties as the basis for the establishment of wage rates on such new operations. Rates to be established and new operations shall be fixed at a point not less than the going rates in the area for the jobs in question. On all rates or grades on which the parties agree, the parties shall immediately file a joint Form 10 application for approval of the National War Labor Board.

If the Union does not agree on a particular rate or grade established or to be established for new operations, the Union shall have three weeks from the date of the institution of the rates by the Employer to question the rates so established. Such disagreement on a particular rate to be established shall be promptly submitted to an arbitrator appointed by the War Labor Board and his findings shall be binding on both parties and shall be retroactive to the date on which it is submitted for arbitration.

New Jobs

31. When a new job is created, a temporary rate is set forth by Management. When the job has settled down sufficiently to warrant it, the committee evaluates it and a permanent rate is set. If the permanent rate is higher than the temporary rate, retroactive wage adjustments are made for those who have worked on the job under the temporary rates. If the rate for a job is raised as the result of job evaluation or re-evaluation and there are probationers on it, the job is reopened for bidding. However, when this happens, only the probationers' jobs are advertised.

32. By recommendation of Union will be classified by Employer in accordance with its existing method.

33. It is expressly understood that the jobs listed above were based upon the definitions hereinafter set forth, and that any jobs which have not been classified within the brackets above set forth shall be classified hereafter in accordance with the following definitions, as provided in Section ____; and that if no agreement is reached between the Union and the Employer concerning classification of such jobs, the matter shall be referred to the Adjustment Board as provided in Section ____ for decision. [Note: Certain definitions listed under five brackets were then quoted for different degrees of all-around skill^s and ability, which

is short of true job evaluation but makes it possible roughly to slot individuals on a temporary basis.]

34. When a bona fide or new job or position is to be established, Management will develop an appropriate rate by the regular procedure in effect in the Corporation for its industrial engineering and industrial relations activities, including the employment of job evaluation, and in the case of incentive rates the application of accepted industrial engineering methods.

New Jobs or Job Grades

35. Any new job or job grade which is not now covered by such schedule and which may properly be so covered shall by collective bargaining be classified, evaluated, and assigned to the appropriate labor grade on such schedule.

New Jobs and Ratings

36. Disapproval by the Shop Chairman shall automatically cause said job classification to be referred to the Personnel Director or whomsoever he may delegate and the Union Shop Chairman, who shall determine said dispute within forty-eight hours, and if the same is not settled thereby, the same shall be referred to the Grievance Board, which shall then undertake to settle the dispute. The decision of the Grievance Board shall be made within forty-eight hours after hearing thereon.

New Rates

37. Wage rates for such new or changed occupations will go into effect at once upon classification subject to government regulations.

New Jobs and Reclassifications

38. All new jobs and reclassifications of old jobs within the bargaining unit, involving a change in wage rates, shall be submitted in writing by the Management to the Shop Chairman of the Union. The Shop Chairman shall approve or disapprove in writing, within forty-eight hours, each job classification proposed by the Management after receipt of the evaluation sheet. If he fails to disapprove in writing within such period the evaluation shall stand approved. The Union shall have the right to ask for and receive a review of any existing job classification within the bargaining unit.

New Occupation

39. If a new occupation is established or if there is a change in the method or process in an existing occupation, the newer changed occupation will be classified by the employer in accordance with the existing methods.

Duration of New Rates

40. In case the Union does not question this new or changed classification within such five-day period, it shall remain in effect during the life of this agreement.

National War Labor Board Approval for Adjustment

41. Adjustment of wage rates inequalities are to be agreed upon by the management and the joint committee prior to submission to the National War Labor Board for approval.

CLASSIFICATION*Reclassification*

42. In the event that either party desires a reclassification of certain jobs to remove the inequalities, the matter shall be determined by negotiation between the Company and the Union. If the parties fail to reach an agreement on such matters within thirty days, an arbitrator shall be appointed by the Regional Board and the cost thereof should be equally paid by the Union and the Company.

Classification

43. Upon completion of the classification of all employees under the job evaluation program, any employee found to be receiving a rate of pay in excess of the maximum of the range for his new classification may be temporarily assigned by the employer to another occupation in a classification where the rate range contains the employee's rate. An employee so temporarily assigned to another occupation who proves satisfactory after a one month's trial will be transferred into the new occupation in accordance with the regular transfer procedure. An employee temporarily assigned to another occupation who does not qualify for this new occupation after one month's trial shall be returned to his original job and may thereafter be assigned to other occupations on the same basis as herein set forth.

44. All employees hereafter hired shall be classified by the employer with recourse to the established grievance procedure in the event of any dissatisfaction on the part of the employee or the Union as to his classification.

MISCELLANEOUS CLAUSES*Permanent Transfers*

45. If an employee is permanently transferred to an occupation in a higher labor grade, the employee shall be transferred at the rate received at the time of transfer, unless such rate is less than the minimum for the

occupation to which the employee is transferred, in which case the employee shall receive such minimum.

If an employee with his consent is permanently transferred to an occupation in a lower labor grade for which work he is duly qualified, the employee will be transferred at the rate received at the time of transfer, unless such rate is higher than the maximum for the occupation to which the employee is transferred, in which case the employee will thereafter receive such maximum.

If an employee is permanently transferred with his consent to an occupation in a lower grade for which work he is not fully qualified, he shall be transferred at either the maximum learner's rate or the minimum rate for the labor grade in which the occupation falls, whichever is the higher, provided, however, that in such event he shall not receive an increase in wage rates as the result of such transfer.

Reconstruction of Work Periods

46. For each such individual the Company will reconstruct the amount of all wage payments (including overtime payments, quarterly supplemental payments, etc.) which the employee would have received, based on an analysis of his payroll record, if the new maximum had gone into effect as of the date of the appeal. Due allowance shall be made, however, for any part of the interim period during which the individual was employed in a different position. To the extent such reconstructed amount is in excess of the wage payments actually received, the difference will be paid to the employee in one lump sum less any deductions required by law.

Reconstruction of Rate History

47. The employee's rate of pay will thus be the minimum rate of the labor grade that includes his classification plus any ingrade increases to which he is entitled since _____ or the date of entry into his classification, whichever is later. The reconstructed length of service for each employee will be determined by the plant classification committee in each plant. In the event that the employee's present rate is higher than the rate he would receive under the program above set forth, the employee will maintain his present rate and the employer will attempt to place him in a job carrying his present rate of pay.

Eligibility of Employees on Retroactive Cases

48. When as a result of a job evaluation appeal the maximum for a position is increased, each individual who held the position for two months or more following the date of appeal, and is still employed by the Company as of the effective date of the new maximum, shall receive

retroactive payment from the Company so that he shall suffer no loss of money because of the lapse of time between the date of the appeal and the date on which the new maximum goes into effect.

Retroactive Payments and Adjustments

49. For the purpose of making retroactive salary payment adjustments of wage schedule treatment, the date of the appeal shall be the date the Union requested that the case be considered under stage II. When a new job evaluation plan is introduced the date of the appeal, for all appeals originating within three months, shall be the date of the introduction of the new plan.

Effective Date

50. Any adjustments from inequalities in wage rates resulting from this study shall, if approved by the National War Labor Board, become effective as of _____.

Wage Grievances

51. Grievances pertaining to a decision of the JOINT JOB EVALUATING COMMITTEE shall be considered as policy grievances and shall be appealed directly by the Union to Step _____, Article _____, Grievance Procedure, of the Union Agreement. Such grievances shall be referred by management to the JOINT JOB EVALUATING COMMITTEE for review, wherein the provision of Article _____, Section _____, shall govern and become management's formal disposition of such grievances.

Incorporation of Job Evaluation Plans in Agreement

52. Pages _____ to _____ inclusive of exhibit _____ attached to joint application on N.W.L.B. Form 10 filed with the National War Labor Board on or about _____ being N.W.L.B. case number _____, entitled _____ is incorporated herein by reference and made a part of this agreement the same as if fully set forth herein.

Failure of Grievance Board to Settle Dispute

53. Failure of the Grievance Board to settle the dispute will then cause the facts and reasons discussed by both parties to be submitted in writing for incorporation into the joint quarterly report submitted by Company and the Union to the National War Labor Board.

Position of Individuals in the Wage Structure

54. The position on the wage schedule of each individual who as of the effective date of the new maximum is still employed in the job under appeal shall be adjusted to that position on the schedule which would

have obtained if the new maximum had gone into effect as of the date of the appeal. When this indicates that the employee shall currently be receiving a higher going rate, the individual will be increased to that higher rate immediately.

Notification of Union

55. The Employer has delivered to the Union a list of occupations classified into their respective labor grades.

Union Acknowledgment

56. The Union acknowledges receipt of list of occupations classified into their respective labor grades.

Notice to Union of New Rates

57. Employer shall give written notice to Union and Union shall have five work days in which to question new rates.

Pending Disputes on Rates

58. The Company, pending determination of any job classification dispute by the National War Labor Board, shall have the right to continue any existing job in accordance with its evaluation hereof or to assign any new job to the wage range in which it has evaluated the job, with the understanding that should the National War Labor Board later order, in settlement of the dispute, that the job be raised to a higher wage range, then the Company will make retroactive wage adjustments to the date of submission to the Grievance Board.

Regular Reports to the National War Labor Board

59. The Management and the Union shall submit at quarterly intervals to the National War Labor Board a report signed by both parties, listing and explaining the job rate changes which have been made during preceding quarter.

Appeal Procedure

60. 1. Any individual employee, or group of employees in the same position, shall have the right at any time to appeal the maximum for his or their position as established by job evaluation.

2. A job evaluation appeal case shall be presented to the Company by the appealing employee or group, in the union, as promptly as possible, and the company will give the case similar prompt consideration.

3. The company will permit such employees and their union representatives necessary time off duty as conditions of the business permit, without pay, for conferring together and preparing the appeal.

4. Appeal shall take the following course:

Stage I. The employee, or group of employees in the same position, shall present the basis for a change in job evaluation to the immediate supervisor and, at the election of the employee or group, may be accompanied by his or their union representative. This first meeting shall be limited to a presentation of the case by the employee or employee group, and no attempt shall be made to settle the appeal. Following this meeting the supervisor shall review the case with the departmental job evaluation analyst. On the basis of this review, the supervisor will call a second meeting of the original group, at which time, on the basis of the additional information then available, the case will be closed if mutually agreeable. The procedures under stage I will be completed within one month.

Stage II. If a solution satisfactory to the employee or group is not reached in stage I, the union office shall notify the personnel assistant in writing that further consideration of the appeal under stage II is desired. The personnel assistant will make necessary arrangements for another meeting, at which the following will be present:

a. In the case of a position having but one job holder, those present will include the job holder, his union representative, a representative of the Union Job Evaluation Committee, the immediate supervisor, the departmental job evaluation chief analyst, and, in addition, the next higher ranking supervisor may also attend.

b. In the case of a group of employees holding the same position, those present will include representatives of the job holders, representatives of the Union Job Evaluation Committee, one or more of the immediate supervisors involved, representatives of the departmental job evaluation committee, and, in addition, higher ranking supervisors may also attend.

At this meeting one of the job holders or the representatives will present the case, and the requirements of the position shall be fully discussed by the group with the object of satisfactorily closing the appeal on the basis of the information discussed.

Stage III. If a solution unsatisfactory to the employee or group is not reached in stage II, the union office shall notify the personnel assistant in writing that further consideration of the appeal under stage III is desired. The personnel assistant will make necessary arrangements for a joint meeting of the Union Job Evaluation Committee and the Company Interdepartmental Job Evaluation Committee. The union and the company committees shall jointly discuss all phases of the case and shall call in for hearing such employees and supervisory personnel as may be considered necessary to obtain needed information. Following the hearings and discussions it shall be the obligation of the joint committee to reach a mutually satisfactory conclusion, and that decision will be final.

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